Occupational Stratification and the Multidimensional Structure of Symbolic Meaning

by

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Dissertation submitted in partial fulfillment of
the requirements for the degree of Doctor
of Philosophy in the Department of
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ABSTRACT

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Abstract

Subjective cultural meanings were once central to occupational stratification research. However, attempts to operationalize cultural meanings associated with occupations have been widely criticized, leading contemporary stratification scholars to largely abandon subjective measures in favor of objective characteristics. This leaves a gap in our understanding of how inequality is generated and maintained because Weber ([1958]) theorized that status, a form of social symbolic power based on cultural beliefs, represents one of the fundamental bases of inequality. Without an adequate method of operationalizing occupational symbolic meanings, the extent to which cultural beliefs influence stratified life outcomes remains largely unknown.

To address this, I used affect control theory, a quantitative general theory of social action, and its measurement model, the semantic differential scale, to examine three issues regarding the relationship between cultural beliefs and stratified outcomes. Symbolic meaning was quantified into EPA ratings that measure three universal, affective dimensions: evaluation (good versus bad), potency (powerful versus weak), and activity (lively versus quiescent). Despite extensive support within structural social psychology, this approach has not been widely used in the field of stratification. In addition to providing a quantitative framework, because symbolic meanings are comprised of multiple dimensions, affect control theory's multidimensional construction

allows for novel approaches not possible using unidimensional measures. The three chapters that follow use affect control theory and ratings of occupational meanings from a newly collected dictionary of affective meaning to address the occupational gender wage gap, the effect of occupational status on life chance outcomes, and the development and testing of a new measure of occupational status.

The first chapter examines one of the most fundamental questions in gender stratification research: why do occupations that employ more women pay less on average than occupations that employ more men? Explanations of this phenomenon remain divided, with devaluation scholars arguing that gender norms play a central role in socializing women into lower-paying occupations, while human capital scholars counter that investments in education and training, not cultural beliefs, account for pay differentials. I argue that a multidimensional model is required to explain how cultural beliefs can simultaneously socialize women into lower-paying occupations while having no direct effect on income. I found that feminine meanings are concurrently high in evaluation but low in potency, with only the power dimension directly affecting wages. This conflation of evaluation and potency allows wage setting to be based on competence, prerequisites, and skills, while cultural gender norms contribute indirectly to the gender wage gap by socializing women to enter occupations with less power and lower skill requirements, particularly skills involving complex problem solving.

The second chapter explores the relationship between occupational status and a broad set of stratified life outcomes. Weber defined status as cultural beliefs based on positive or negative estimations of respect, worthiness, and value to society, but the predominant measure of status, occupational prestige scores, has been criticized for reflecting objective characteristics rather than subjective cultural beliefs. I argue that the evaluation dimension of EPA profiles is a theoretically sound operationalization of Weber's definition. I then explored how ratings of evaluation predict, net of sociodemographic controls, twenty-five life-chance outcomes grouped into traditional work- and income-related life-chance measures, cultural consumption, institutional participation, and political and social attitudes. Results indicate that status, operationalized by evaluation, is significantly predictive of work- and income-related measures, institutional participation, and political and social attitudes. Contrary to other measures of status that primarily posit an association between status and lifestyle, I find little to no significant associations with any of the lifestyle measures. I argue that this difference is due to the fact that other measures are based on the potency dimension that reflects objective class differences, whereas a measure that more closely reflects status based on cultural beliefs produces a different set of relationships.

Given the widespread criticism that prestige scores do not adequately operationalize occupational status beliefs, in the third chapter I developed and tested a new measure of occupational status. Based on theoretical assertions that status is

constructed and diffused through deference behavior, I used affect control theory to model the likelihood that one occupation would defer to another. The predicted affective dissonance, or deflection, created when one occupational actor performs the action "defers to" provides an indicator of the status associated with an occupation. A status deflection score is computed by using affect control theory to predict the mean deflection created for a matrix of all possible combinations of occupations. Higher deflection scores indicate greater status, and those occupations would be less likely to defer relative to other occupations.

Because status is based on widely held cultural beliefs, data from Harris Poll surveys were used to test for construct validity. The results show that deflection is more predictive of status rankings from poll data than occupational prestige scores. Criterion validity was tested using five theoretically relevant workplace outcomes: subjective attachment, job satisfaction, general happiness, the importance of meaningful work, and respect. The results found deflection scores to be significantly associated with all five measures net of controls.

Dedication

This dissertation is lovingly dedicated to my wife Heather. She's been my biggest supporter and cheerleader and this couldn't have been done without her. I hope this dissertation makes her proud of the sacrifices she's made these many years that made this possible.

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Acknowledgments

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1. Introduction

Subjective measures of cultural beliefs were once central to occupational stratification research because cultural beliefs, acting as behavioral references, influence how people act toward one another and personal life-course decisions. However, attempts to operationalize cultural meanings associated with occupations have been widely criticized, leading contemporary stratification scholars to largely abandon subjective measures in favor of objective characteristics. This leaves a gap in our understanding of how inequality is generated and maintained because Weber ([1958]) theorized that status, a form of social symbolic power based on cultural beliefs, represents one of the fundamental bases of inequality. Without an adequate method to operationalize occupational symbolic meanings, the extent to which cultural beliefs influence stratified life outcomes remains largely unknown. To further our understanding of the relationship between cultural beliefs, social action, and stratified outcomes, new approaches must be developed that accurately reflect the structure of cultural meanings.

I argue that a central problem of current measures is that they are unidimensional despite the multidimensional structure of symbolic meaning. During cross-cultural research, Osgood and colleagues (1975; 1957; 1990) found that the symbolic affective meaning of social concepts, including identities, behaviors, emotions, and settings, could be quantified along three universal dimensions of evaluation (good versus bad), potency (powerful versus weak), and activity (lively versus quiescent). Each dimension is measured on a bipolar scale from -4.3 to 4.3 with 0 being neutral. The compilation of the

three dimensions defines a concept's EPA rating or profile and represents its stable, widely held cultural meaning.

Using Osgood's measurement model, affect control theory (Heise 2007; Smith-Lovin and Heise 1988b) theorizes how cultural meanings serve as references that orient social action. It assumes that people behave in ways that confirm cultural meanings, and specifies this meaning maintenance process using a series of mathematical equations that predicts how impressions created during social interaction events influence subsequent action.

Using this robust and well-supported theory and a multidimensional measurement model allows for novel approaches that are not possible when using unidimensional conceptualizations. The following studies combine EPA ratings from a newly collected dictionary of affective meaning with the quantitative framework of affect control theory and the semantic differential scale to address three important issues within the stratification literature.

The first study explores the relationship between cultural meanings and the occupational gender pay gap. In this study, I develop, then support, a dual-process model of gender stratification. Unlike previous models that posit a direct, unidimentional relationship between cultural beliefs and income, I argue that a multidimensional approach is required because feminine occupational meanings are concurrently high in evaluation but low in potency, with only the potency dimension directly related to wages. This conflation of evaluation and power allows cultural meanings to indirectly affect wages by socializing women into high-evaluation but low-potency occupations.

In the second study I argue that the evaluation dimension of EPA ratings more closely operationalizes Weber's ([1958]) definition of status as a form of symbolic social power based on cultural evaluations of social honor, respect, and worthiness. I then explore its ability to predict a host of important life-chance outcomes net of sociodemographic controls. The resulting associations exhibit markedly different patterns than those found using other status measures.

In the third study I develop and test a new measure of occupational status. Based on theoretical assertions that status differences are created and diffused through deference behavior, I use affect control theory to compute a deflection scale by modeling the predicted likelihood that one occupation will defer to another. Because status is based on widely held cultural beliefs, data from Harris Poll surveys were used to test for construct validity. The results show that deflection scores much more closely mirror status rankings from poll data than occupational prestige scores. Criterion validity was tested using five theoretically relevant workplace outcomes: subjective attachment, job satisfaction, general happiness, the importance of meaningful work, and respect. The results found deflection scores to be significantly associated with all five measures net of controls.

1.1 Summary of Chapter 2

The question of why women earn less on average than men is one of the most fundamental yet contested questions in stratification research. While scholars agree that the difference is due primarily to the differential distribution of women into lower-paying

occupations, explanations of this phenomenon remain sharply divided. The relationship between wages and gendered cultural sentiments remains a central yet unresolved issue.

Supporters of the devaluation thesis argue that cultural meanings are significant because traits associated with female-dominated occupations such as goodness, caring, and warmth are devalued by patriarchal society, and that gendered beliefs socialize women to enter devalued occupations as an expression of their gendered selves (Acker 1989; England 1992; 2010; Reskin and Maroto 2011). Supporters of human capital theory counter that wages are a function of differential investments in human capital, including education, training, and tenure, and that objective socioeconomic characteristics can account for the gender wage gap (Becker 1985; Polachek 1981; Tam 1997). Despite extensive debate these perspectives remain divided, with neither approach able to explain how cultural meanings can simultaneously socialize women into low-paying occupations yet have no effect on pay.

The purpose of this study was to develop and test a dual-process model of occupational gender stratification that bridges both perspectives. I argue that cultural symbolic meanings associated with social concepts, including occupations, are multidimensional constructs comprised concurrently of potency (power, competence, and prerequisites) and evaluation (goodness, caring, and warmth). Furthermore, I posit that feminine meanings are concurrently high in evaluation but low in potency, with only the potency dimension directly influencing wages. Modeling evaluation and potency as separate dimensions integrates the seemingly incompatible findings of devaluation and human capital theory into a multidimensional framework in which wage setting and

gender socialization are two distinct but interrelated processes. The conflation of evaluation and potency allows wage setting to be based on perceptions of competence, qualifications, and skills, while evaluation affects income indirectly through socialization of cultural gender norms that induce women to enter occupations with lower training and skill requirements, especially complex problem-solving skills.

To test this model I first combined data from the 2011 American Community Study (ACS), measures of occupational characteristics from the Bureau of Labor Statistics' Occupational Information Network (O*NET), and occupational EPA ratings found in a newly collected affective dictionary. I then explored the relationships between occupational gender concentration, cultural meanings, objective occupational characteristics, and income, first on the bivariate level then using a series of hierarchical linear models.

As theorized, EPA ratings for the social concept *female* were higher in evaluation but lower in potency than ratings for the concept *male*. This relationship is mirrored in occupational ratings as occupations with the highest concentration of women were higher in evaluation but lower in potency compared to occupations with the lowest percentage of women. In addition, occupations with higher concentrations of women had lower average incomes compared to occupations with the lowest percentage of women, despite the fact that 31 percent of workers in female-dominated occupations possessed a college degree compared to 8 percent in male-dominated occupations. Exploring only evaluation provides results consistent with devaluation theory's position that female-dominated occupations are paid less despite high levels of educational attainment.

The addition of the potency dimension dramatically alters this narrative. Results of bivariate correlations indicate that potency, in addition to measures of training and complex problem-solving requirements, is much more strongly correlated to income than evaluation. Contrary to devaluation theory, evaluation is positively associated with both income and potency, suggesting that evaluation is not in itself culturally devaluated but instead consistent with Weber's ([1958]) notion that status is a form of symbolic social power that positively influences life outcomes.

Results for a series of hierarchical linear models indicate that EPA ratings could fully account for the occupational gender wage gap, although only potency was significantly related to income while evaluation was not significant. Similarly, the occupational characteristics of training, service orientation, physical labor requirements, hazardous work, and complex problem-solving skill requirements were significant and could also account for the gender wage gap. When both perspectives were modeled together, the effects of training and complexity were reduced by 13 percent and 27 percent respectively, while the effect of potency was reduced by 76 percent. Although potency remains significant, the large reduction in its effect suggests that potency ratings are primarily a subjective reflection of objective features. These results are consistent with the dual-process model developed in this paper. Training and skill requirements directly affect income while gendered symbolic meanings indirectly affect income by influencing the distribution of female workers into occupations with lower training and skill requirements.

1.2 Summary of Chapter 3

Expanding on the insights of MacKinnon and Langford (1994) who used the semantic differential scale to explore occupational meanings, I argue that the evaluation dimension of EPA ratings provides a theoretically sound operationalization of Weber's (1946:187) definition of status as a form of symbolic social power based on cultural evaluations of "positive or negative, social estimation of honor." Using this measure of occupational status, I explore its association with a broad set of stratified life-chance outcomes categorized into traditional life-chance measures, cultural consumption, institutional participation, and political and social attitudes. Net of controls for age, gender, race, education, and income, the pattern of association using evaluation as a measure of status produced markedly different results than those found using other measures.

Contrary to Chan and Goldthorpe (2007c) who found their measure of status based on friendship networks to be significantly related to cultural consumption patterns, especially newspaper readership, I find little to no association between status and consumption patterns. Instead, the results indicate that status is significantly associated with measures pertaining to subjective and objective life-chance outcomes, institutional participation, and political and social attitudes. I argue that these differences are due to the fact that Chan and Goldthorpe's measure is a subjective reflection of class conditions captured in the potency dimension while evaluation operationalizes status as a form of social power independent of class conditions. Because these two measures are based on separate bases of power, they will exhibit different associations with stratified outcomes.

1.3 Summary of Chapter 4

In the 1960s prestige scores (Goldthorpe and Hope 1972; Treiman 1977) were the predominant method of operationalizing occupational cultural meanings, but widespread criticism that they reflect objective features, especially education, rather than cultural beliefs has led to their declining use within contemporary stratification research. To provide an alternative, a new deflection scale of occupational status was developed and tested.

Based on the theoretical foundation that status is a form of symbolic power embedded in cultural beliefs that leads to structured relationships of deference (Goldthorpe and Hope 1972), affect control theory was used (Heise 2007; 2010) to construct a deflection scale based on the predicted likelihood that one occupational identity would defer to another based on cultural symbolic meanings measured using EPA ratings. By computing the mean deflection created when an occupational actor defers to another for all possible combinations of 125 occupations found in a new collected dictionary of affective meaning, this chapter presents a quantitative status scale that is consistent with the theoretical foundations of status.

The construct and criterion validity of the deflection scale was then tested. Because status is based on cultural beliefs, construct validity was explored by comparing occupational deflection and traditional prestige scores to occupational rankings found in public opinion polls conducted by Harris Interactive (Corso 2009). As posited by theories of occupational status (Goldthorpe and Hope 1972; Hope 1982), the highest-status occupations as indicated by both Harris Poll data and deflection are those that provide a

"service to society" such as firefighters, doctors, and teachers. These data also indicate that status is not determined primarily by pay or education. In contrast, the most prestigious occupations according to traditional prestige scores were all highly educated professional occupations such as professors, doctors, lawyers, and judges. Furthermore, when matching deflection and prestige scores to the twenty-three occupational titles surveyed in opinion polls, only deflection scores were found to significantly predict the ranking of occupational prestige reflected in poll data. Analyses of the EPA structure of deflection and prestige scores find that while deflection is primarily a function of evaluation, which measures cultural estimations of goodness, prestige scores are primarily determined by the potency dimension that measures power and competence.

The deflection score was then tested for criterion validity, the ability of a measure to predict theoretically relevant outcomes. If occupational status provides cultural rather than monetary value, then deflection should be linked to important subjective workplace outcomes involving satisfaction, respect, and meaning. Using a series of regression models, I tested the ability of deflection scores to significantly predict the following five important workplace outcomes: 1) attachment, 2) job satisfaction, 3) happiness, 4) respect, and 5) the relative importance of meaning and a sense of accomplishment at work. Regression results indicate that deflection scores were significantly predictive of all five outcomes net of sociodemographic controls, and was the strongest predictor of job satisfaction and respect even compared to education and income.

2. Bridging the Gender Wage Gap: A Dual-Process Model of Occupational Gender Stratification

2.1 Introduction

Despite extensive gains of women in educational attainment and workplace integration, occupations with more female workers continue to earn less on average than comparable occupations employing more men (Bertrand 2011; Buchmann, DiPrete, and McDaniel 2008; Charles 2011). Explaining this phenomenon is critical for understanding gender inequality because the differential distribution of women into lower-paying occupations accounts for more of the gender wage gap than within-occupation differences (Petersen and Morgan 1995; Tomaskovic-Devey 1993). While scholars agree that wages are correlated with gender composition, explanations remain sharply divided (England 1992; England, Hermsen, and Cotter 2000; Tam 1997; 2000).

The role of gendered cultural sentiments remains a fundamental yet unresolved issue. Cultural beliefs, socialized early and throughout the life course, are a key factor affecting career decisions (Correll 2001; Morgan, Gelbgiser, and Weeden 2013). Some argue that cultural meanings are significant because traits associated with female-dominated occupations are devalued by patriarchal society and that women are socialized into devalued occupations, not based on rational choice but as an expression of their gendered selves (Acker 1989; England 1992; 2010; Reskin and Maroto 2011). On the other hand, scholars taking an economic approach argue that wages are a function of differential investments in human capital including education, training, and tenure, and

that cultural meanings are unnecessary for explaining wage differences (Becker 1985; Polachek 1981; Tam 1997). However, critics counter that the fact that human capital scholars typically do not include measures of cultural meaning poses a serious weakness in their argument because adjudication requires not only explaining wage differences but also that it is not a result of competing theories (Grönlund and Magnusson 2013).

Despite extensive debate these perspectives remain divided, with current approaches unable to explain how cultural meanings can simultaneously socialize women into low-paying occupations yet have no effect on pay, or why women would invest in educational credentials yet select lower paying occupations. This article addresses this issue by developing and testing a multidimensional model of occupational gender stratification capable of integrating the findings from both perspectives. I argue that symbolic meaning associated with social concepts, including occupations, are multidimensional constructs comprised simultaneously of power (competence, rewards, and prerequisites) and evaluation (goodness, caring, and warmth), and that processes linked to both dimensions must be explored in concert. The unidimensional measures of symbolic meanings used in previous research lack the degrees of freedom required for cultural norms to influence occupational distributions yet have no direct effect on wages. I further posit that feminine meanings are concurrently high in evaluation but low in power, with only the power dimension directly influencing wages. This conflation of evaluation and power allows wage setting to be based on perceptions of competence, qualifications, and skills, while cultural

gender norms contribute indirectly to the gender wage gap by socializing women to enter occupations with less power and lower skill requirements, particularly skills involving complex problem solving.

To provide support for this multidimensional model, this work combines income and demographic data from the 2011 American Community Survey and occupation-level measures from the Occupational Information Network (O*Net) with quantitative ratings of symbolic meaning from a representative list of occupational titles from a newly collected dictionary of affective meaning. This integrative framework is an important step forward in the debate, both empirically and theoretically. The use of a quantitative, multidimensional measure of cultural sentiments that integrates both power and esteem allows quantitative modeling of both perspectives. Separating power and esteem into separate but interrelated processes bridges the gap between human capital and gender socialization perspectives by providing added support to the human capital model while simultaneously demonstrating that gendered cultural meanings do matter but not in the direct manner previously theorized. By demonstrating that wage setting and gender socialization are related yet separate processes, stratification scholars can more accurately explain the relationship between cultural beliefs, human capital investments, and pay, and by doing so integrate these two divided perspectives.

2.2 Theory

2.2.1 Cultural Beliefs and Career Selection

While scholars have explored an array of differences between male and female workers to explain pay differentials, including tenure (Hollister and Smith 2014; Munasinghe, Reif, and Henriques 2008) and negotiation skills (Babcock and Laschever 2009), most of the gender wage gap is due to the sorting of workers across occupations rather than differences within occupations (England, Allison, and Wu 2007; Hegewisch, Liepmann, Hayes, and Hartmann 2010). Consequently, explanations must focus on mechanisms that influence career selection and differential occupational sorting. Although leading theories of career selection differ regarding specific processes (Dawis 2002; Gottfredson 1981; Holland 1997), they share a common theoretical foundation that people select occupations based on the congruence between their self-image and their knowledge of different occupations (Leung 2008). Cultural beliefs, socialized early and throughout the life course, are central to this process because they provide a key source of information in people's understanding of what occupations mean both economically and socially.

Occupational images are multidimensional constructs based primarily on dimensions of prestige and gender type (Glick 1991; Glick, Wilk, and Perreault 1995). Prestige reflects the power associated with an occupation and the lifestyle that power affords, and is highly correlated with competence, intelligence, and analytic reasoning (Glick, Wilk, and Perreault 1995). Gender type reflects sex ratios and perceptions of

masculinity-femininity, and provides the basis for occupational gender norms. Socialization to these images begins very early in life with perceptions of power formed between ages three and five, followed by gender stereotypes between ages six and eight (Gottfredson 1981); only much later (fourteen years and older) do personal values and ability become integrated into the career decision-making process (Gottfredson 1981).

The composition of gendered cultural meanings has a long research tradition that can be traced to the Parsonian distinction between expressive and instrumental action (Parsons 1954; Parsons and Bales 1955). Expressive tasks are those traditionally associated with child rearing and housework, while instrumental tasks involved decision making and leadership in the workplace. Traits associated with the performance of instrumental action such as dominance, strength, and competence took on masculine connotations while goodness, caring, and warmth associated with expressive action became viewed as feminine traits (For a review of this process see Webster and Rashotte 2009). A robust literature continues to support this two-dimensional model of gender meanings (Cramer, Million, and Perreault 2002; Kilbourne, Farkas, Beron, Weir, and England 1994; Langford and Mackinnon 2000a; Mottarella, Fritzsche, Whitten, and Bedsole 2009). A related literature within psychology has independently produced the same two-dimensional model. The distinction between power and evaluation provides the basis for two leading contemporary gender scales: the Bem Sex Role Inventory (Bem 1974) and the Personal Attributes Questionnaire (Spence and Helmreich 1978).

Although gender stereotypes are vague and provide almost no details of what jobs actually entail, they are nonetheless a highly influential knowledge source. Even among college students with specific career plans, "direct questions about the job elicited only vague responses and when probed they were met with embarrassment and hostility"(Gottfredson 1981:551). Potential workers use dimensions of power and evaluation to select occupations that will maximize rewards and lifestyle but in ways that conform to gender norms. England (2010) contends that this is apparent not only in the gender distribution of workers but in patterns of workplace integration since gender integration has occurred primarily in high-level occupations such as management because women will enter male-dominated occupations only when gendered opportunities for upward mobility are unavailable. She finds that when female workers in low-wage occupations such as retail sales and childcare upgrade their education to seek upward mobility, they commonly transition to other female-dominated occupations such as teaching or nursing because they offer increased income while simultaneously conforming to gender norms (England 2010).

2.2.2 Devaluation and Human Capital Theory

The tendency for female workers to be concentrated in occupations characterized by high evaluation (goodness, caring, and warmth) provides the basis for the devaluation hypothesis, which posits that because women are culturally devalued the social roles (including occupations) and skills associated with these roles will be less rewarded relative to tasks associated with masculine traits (Acker 1989; England 1992;

Kilbourne et al. 1994). By focusing on cultural meanings and traits rather than the gender of the individual worker, this prevents the need for overt discrimination against women by allowing devaluation to operate at the level of the occupation.

Human capital theorists counter that wage setting is a gender-neutral function of investments in human capital (Becker 1985; Polachek 1987; Tam 1997). Occupations with added costs or risks, such as educational investments or hazardous work, must be compensated in the labor market and can account for wage differentials. Because jobs involving complex problem solving and deductive reasoning skills are more highly compensated, differential educational investments in these skills will affect income (Liu and Grusky 2013). Proponents argue that not only can these objective job features account for the gender wage gap but also that there is no direct evidence that cultural meanings are involved in this relationship. Despite extensive debate that culminated in a series of articles between Tam (1997; Tam 2000) and England (England, Hermsen, and Cotter 2000), little progress and virtually no integration of these seemingly incompatible perspectives has been made. To move beyond the current stalemate and determine how cultural beliefs can both influence the gendered distribution of occupations yet have no effect on wages, methodological issues on both sides must be resolved.

A central criticism of the human capital approach is that it does not include measures of cultural meanings in its models (Grönlund and Magnusson 2013). Accounting for income variances without also accounting for alternative explanations is inadequate. Given the evidence that cultural meanings play a central role in career

selection and gender socialization, cultural meanings must be accounted for before adjudication between these two perspectives can be determined. Furthermore, critics highlight that human capital's theoretical explanation that women invest less in human capital due to lower levels of attachment to work runs counter to women's high levels of educational attainment and evidence of similar work-family orientation (Morgan, Gelbgiser, and Weeden 2013; Xie and Shauman 2003).

On the other hand, a fundamental weakness of the devaluation hypothesis is that the most prominent scales used to operationalize gendered meanings—occupational prestige scores (Magnusson 2009) and Kilbourne's nuturant scale (Kilbourne et al. 1994)—are problematic. The use of prestige scores is based on the assertion that they capture cultural beliefs regarding an occupation's value to society (Goldthorpe and Hope 1972; Treiman 1977). However, critics counter that prestige scores do not reflect gender differences because they are highly stable regardless of changes in gender composition (Hout and DiPrete 2006; Wegener 1992) and that they do not measure cultural beliefs at all but instead reflect objective features, particularly educational credentials (Bukodi, Dex, and Goldthorpe 2011; Hauser and Warren 1997).

Using data from the Dictionary of Occupational Titles (U.S. Department of Labor 1991), Kilbourne's (1994:716) nurturant scale is based on the degree that an occupation is "providing a service while engaged in face-to-face contact with clients or customers." But even supporters acknowledge that this operationalizes service orientation, an objective occupational characteristic, not gendered cultural meanings. In her review of

care work, England (2005:383) states that this scale measures Leidner's (1993) concept of interactive service work, not nurturance as conceptualized by gender devaluation. In addition, service orientation is becoming more gender neutral as more men and women enter the service sector of postindustrial economies. Without a widely accepted measure of cultural meanings, even proponents of devaluation admit that "there is no direct evidence that the mechanism is cultural devaluation" (England 2005:383).

A central issue with current measures has been the singular focus on the dimension of evaluation associated with female-dominated work despite extensive theoretical and empirical evidence that both evaluation and power are involved in the structure of gendered meanings. To account for this, this study uses the semantic differential scale, also known as EPA ratings, to operationalize cultural sentiments associated with occupations.

2.2.3 Semantic Differential Scale

This work uses Osgood's semantic differential scale to operationalize affective cultural sentiments associated with occupations (Heise 1969; Osgood 1962; Osgood, May, and Miron 1975; Osgood, Suci, and Tannenbaum 1957; Osgood and Tzeng 1990). In their cross-national research, Osgood and colleagues find that the symbolic affective meaning of social concepts can be quantified along three universal dimensions of evaluation, potency, and activity, with each dimension measured on a bipolar scale from -4.3 to 4.3 with 0 being neutral. The evaluation dimension measures good versus bad and warm versus cold, potency measures powerful versus weak, and activity measures

active versus quiescent. Mean ratings for each of the three dimensions were compiled into an EPA (evaluation, potency, activity) rating or profile that quantifies the total affective meaning associated with a concept. For example, the EPA rating for the occupational identity *physician* is (1.74, 1.76, -0.41), conveying that physicians are generally perceived as good and powerful but not very active actors.

EPA ratings have several notable features that make it well-suited for this study. First, as the measurement model for Affect Control Theory, a leading quantitative theory of social action (Heise 2007; MacKinnon and Heise 2010b; Smith-Lovin and Heise 1988a), EPA ratings have been used to examine a broad range of sociological topics including deviance (Schneider 2009; Tsoudis and Smith-Lovin 1998), family (Kroska 2003), and religion (Smith-Lovin 1992). Second, because it is central to an active research paradigm, it has received extensive support as a valid measure of cultural meaning. For a bibliography see Heise (2014a). Last, in a study examining the relationship between the EPA rating of social traits and perceptions of masculinity/femininity, Langford and McKinnon (2000b) provide two key findings supporting the use of EPA ratings in this study. First, they find that high evaluation is associated with perceptions that a trait is associated with females while potency is tied to perceptions of traits associated with males. Second, they confirm that femininity is characterized by expressive traits oriented toward others such as being *helpful*, *gentle*, and *emotional*, while masculine traits are those oriented toward workplace leadership, including being *strong*, *confident*, *industrious*, and *wise*.

2.3 Data and Methods

2.3.1 Data

This study integrates individual and occupation-level data from three sources: the 2011American Community Survey (ACS), the U.S. Department of Labor's Occupational Network (O*NET), and a newly collected dictionary of affective meaning. Individual-level data including income, gender, and background controls come from the 2011 ACS accessed through the Integrated Public Use Microdata Series (IPUMS-USA) (Ruggles, Alexander, Genadek, Goeken, Schroeder, and Sobek 2010). The ACS is a 1-in-100 national random sample of the U.S. population conducted by the U.S. Census Bureau to monitor demographic and housing trends (U.S. Census Bureau 2014). The sample for this study is limited to employed, working-age adults aged sixteen to sixty-four. This sample is current enough to reflect contemporary workplace conditions and large enough that evidence of gender devaluation should be apparent if present. Descriptive statistics for all measures and coding are shown in Table 1.

Consistent with the approach used by Tam (1997), data on occupational characteristics come from the U.S. Department of Labor's Occupational Information Network (O*NET). As a replacement for the Dictionary of Occupational Titles (DOT) used in earlier studies (U.S. Department of Labor 1991), O*NET provides information on a variety of occupational characteristics including work environment, tasks, skills, training, and educational requirements (U.S. Department of Labor 2014b). Occupational characteristics were appended to individual-level data in the ACS based on occupation

codes using the 2010 Standard Occupational Classification (SOC) system (U.S. Bureau of Labor Statistics 2014b). Occupations were coded in the ACS using five- or six-digit codes with approximately 15 percent of occupations using four-digit codes. When occupation codes encompassed more than one occupation, the occupation with the largest number of workers was used to represent that occupational grouping. For example, occupational characteristics for *biologist* (19-1020) were appended to ACS respondents with the occupation *life scientist* (19-10XX).

EPA (evaluation, potency, and activity) ratings quantifying occupational cultural sentiments come from a newly collected dictionary of affective meaning. As the measurement model of affect control theory (Heise 1999; 2007; Smith-Lovin and Heise 1988b), dictionaries of affective meanings are periodically collected to provide quantitative measures of cultural sentiments along the three affective dimensions. Previous dictionaries were compiled in 1976 and 2007 at the University of North Carolina at Chapel Hill and the University of Indiana respectively (Heise 2014b). The data for this study come from a collaborative project between a large public university and a private university in the South. Acting as cultural informants, 848 participants rated 2,400 social concepts including identities, behaviors, modifiers, and settings along the three EPA dimensions, with the mean value for each dimension representing a concept's EPA profile or rating. Surveys were administered using a computer survey program that randomizes the order concepts and affective dimensions are presented. Similar to other subjective measures such as prestige scores (Treiman 1977), relatively

small samples are required to produce consistent means. Reliabilities exceeding 0.90 can be achieved with thirty raters, and fifty raters can exceed 0.95 reliability across the three dimensions and 0.98 on the evaluation dimension (Heise 2010). The median number of raters for each concept in this study was sixty-two with a standard deviation of 4.5. For a detailed review of methodological issues including reliability and measurement error see Heise (2010).

The affective dictionary includes approximately 300 occupation-related identities within the list of social concepts. MacKinnon and Langford (1994) note that professional and white-collar occupations were overpresented in previous dictionaries. Consequently, a three-stage process was used to construct a current and representative occupation list for the current dictionary. First, a high-, middle-, and low-income occupation was selected from each of the twelve major occupational groupings of the 2010 SOC occupational schema. Second, for historic comparability the thirty core occupations from the GSS prestige module were included if not already present (Nakao and Treas 1990). Third, occupational titles from previous affective dictionaries were included for historical comparability.

Commonly reported job titles were used to rate occupations. For example, the identity *stockbroker* was used for the occupation *Sales Agents, Securities and Commodities* (41-3031). For occupational codes comprising multiple identities such as *Accountants and Auditors* (12-2011), the identity corresponding to the occupation with the largest percentage of workers was selected, in this case *accountant*. Similarly, gendered

identities are used for gender-specific occupational titles. For example, *waitress* was matched to *Waiters and Waitresses* (35-3031), given the large proportion of female workers in that occupation. Military occupations were excluded from this study because cultural sentiments varied widely depending on rank and branch of service and military SOC codes lacked the specificity to capture this variation. Because occupation codes frequently encompassed multiple identities, 190 unique occupational titles were matched to ACS occupations for this study. The crosswalk of occupational titles and 2010 SOC codes are shown in Appendix A.

2.3.1.1 Variables

The dependent variable for this study is the natural logarithm of total personal income and consists of the respondent's total annual pretax personal income from all sources. This and all other individual-level variables come from the 2011 ACS. Because the debate regarding the occupational gender wage gap centers on occupational characteristics and not workers within them, the independent variables of interest are occupation-level measures. The primary independent variable is occupational gender composition, is computed as the proportion of female workers within each occupation found in the ACS. The devaluation and human capital perspectives offer competing explanations for the relationship between gender composition and income. While the former focuses on cultural meanings, the latter focuses on objective occupational characteristics, especially education and training. Symbolic cultural meanings are

operationalized using the three-dimensional occupational EPA ratings as previously discussed.

Central to human capital theory as articulated by Tam (1997) is the idea that educational investments, especially on-the-job training operationalized as *special vocational preparation* (SVP), can account for wage differentials. Similarly, I include SVP in this study but adopt the categorical operationalization found in O*NET and augment it with an additional measure of complex problem-solving skill requirements. In both studies SVP is originally coded as a nine-level categorical variable ranging from *short demonstration only* to *over 10 years* (U.S. Department of Labor 2014c). Using England and Kilbourne's (1988) calculation of categorical midpoints, Tam extrapolates mean training years for each occupation. For example, childcare workers were reported to require 0.4 years of training, computer operators 1.5 years, and mechanical engineers 6.1 years. However, these point estimates imply a level of precision not present in the underlying data, particularly for increasingly complex occupations. While there is consensus that highly routinized jobs do not require extensive training, perceptions of occupational training requirements become increasingly uncertain with greater complexity. For example, responses for *fraud analysts* (13-2099) were distributed across all nine training levels, and while 27 percent of *surgeons* (29-1067) indicated that their occupation required four to ten years of on-the-job training, a slightly larger proportion (28 percent) indicated that they required nothing more than a short demonstration. As a result, O*NET does not provide point estimates but uses SVP categories that group occupations

with similar levels of experience, education, and training required to perform the work (U.S. Department of Labor 2014a). This study operationalizes SVP as provided in O*NET, which is coded as a five-level scale ranging from occupations that *need little or no preparation* to occupations that *need extensive preparation*. To account for the loss of granularity in vocational training requirements, I include a measure of complex problem solving also found in O*NET.

Complex problem solving is defined as the skill required for "identifying complex problems and reviewing related information to develop and evaluate options and implement solutions" and addresses several issues with the variable SVP (Fleisher and Tsacoumis 2012). First, SVP is defined as the amount of time "required by a typical worker to learn the techniques, acquire the information, and develop the facility needed for average performance in a specific job-worker situation," which ideally should reflect the need to resolve complex workplace problems not already addressed through formal education (U.S. Department of Labor 2014c). However, Weeden (2002) demonstrates that training, certification, and licensure requirements often reflect the ability of powerful groups to construct social closure mechanisms in addition to occupational needs. This is a critical issue because if female-dominated occupations are devalued, these occupations would experience difficulties in having their requirements codified and broadly accepted. This process is evident in the difficulties encountered by the nursing profession in getting training requirements recognized (Abbott and Meerabeau 1998; Cancian and Oliker 2000) as well as difficulties in maintaining established levels of

professionalization (Andrews and Wærness 2011). By operationalizing the need for complex problem solving skills directly, training requirements for less-powerful occupations can be included regardless of whether the complexity of their occupation is widely recognized or not.

Second, SVP ratings are provided by occupational incumbents who may over- or underestimate their profession's training requirements. If devaluation is skewing worker perceptions of relative skill requirements, then a more rigorous measure is needed. In contrast to SVP, in O*NET skill ratings including complex problem solving are constructed by a team of trained occupational analysts using standardized procedures (Fleisher and Tsacoumis 2012). Analysts develop ratings based on a wide array of occupational characteristics including core and supplemental tasks, educational and vocational requirements, work context and activities, and general versus targeted work skills. Extensive training requirements and standardized procedures are used to compensate for the effect of cultural biases. Analyst prerequisites include two years of work experience, two years of graduate school, and courses in both job analysis and research methods. All occupations were rated by a minimum of eight analysts, and procedures were implemented to monitor, evaluate, and train analysts to ensure a minimum interrater reliability of 0.80. For details regarding methodology see Fleisher and Tsacoumis (2012).

In addition to SVP and complex problem solving, three other occupational characteristics associated with income and gender composition are included: service

orientation (Kilbourne et al. 1994; Leidner 1993; Oesch 2006), hazardous work (Robinson 1986; Viscusi 1978; 2014), and physical demands (Liu and Grusky 2013; Weeden 2002). Coding and descriptive statistics for all measures are shown in Table 1.

2.3.1.2 Control variables

A series of individual-level variables were included to control for individual variation in background characteristics, job sector, and geographic location. Sociodemographic controls include gender, age, race/ethnicity, education, marital status, and number of children. Age squared was also included to account for the curvilinear relationship between age and income. Variables associated with the workplace include full-time status, geographic region, metropolitan versus rural status, and industry. Full-time status is a dummy variable coded one if the respondent worked thirty-five or more hours in a typical week as defined in the ACS (U.S. Census Bureau 2012). A series of thirteen dummy variables was used to control for industry based on major industry sectors of the ACS. Casewise deletion on all variables produced an analytic sample of 898,066 cases.

Table 1: Variables and Descriptive Statistics for Chapter 2

Name	Measurement/description	Mean (s.d.)	Min, Max
	Occupation-level measures		
Percent female	Percentage of female workers employed within each occupation	.41 (.29)	0, .98
Evaluation	Good versus bad, warmth versus cold (-4.3 to +4.3)	1.24 (.64)	-1.68, 3.21
Potency	Powerful versus weak (-4.3 to +4.3)	.84 (.93)	-1.66, 3.16
Activity	Active versus quiescent (-4.3 to +4.3)	.41 (.89)	-2.01, 3.13
Special vocational preparation		2.89 (1.17)	1, 5
Service orientation	Actively looking for ways to help people	2.99 (.51)	1.75, 4.12
Physical demands	Performing physical activities that require considerable use of your arms and legs and moving your whole body, such as climbing, lifting, balancing, walking, stooping, and handling of materials	2.91 (.91)	1.04, 4.60
Hazardous		1.95 (.96)	1.00, 4.90
Complex problem solving	Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions	3.11 (.49)	2.12, 4.50

Continued on next page.

Table 1 continued.

Name	Measurement/description	Mean (s.d.)	Min, Max
	Individual-level measures		
Female	Female = 1	.49 (.50)	0, 1
Age	Years	42.0 (12.8)	18, 64
Education	Highest year of schooling completed	13.7 (3.1)	0, 24
Income	Natural logarithm of total personal income	10.3 (1.15)	0, 14.2
Race/ethnicity			
White	White = 1, reference category	.71 (.46)	0, 1
Black	Black = 1	.09 (.29)	0, 1
Hispanic	Hispanic = 1	.13 (.33)	0, 1
Asian	Chinese, Japanese, other Asian or Pacific Islander = 1	.05 (.22)	0, 1
Other	Other race, two, three, or more = 1	.02 (.15)	0, 1
Marital status	Married = 1	.58 (.49)	0, 1
Number of children	Number of own children in household	.81 (1.11)	0, 9
Full time employment	Working 35 hours per week or more = 1	.78 (.41)	0, 1
Metro status	Metro area = 1	.73 (.44)	0, 1
Geographic region			
Northeast	Northeast = 1	.19 (.39)	0, 1
Midwest	Midwest = 1	.23 (.42)	0, 1
West	West = 1	.23 (.42)	0, 1
South	South = 1, reference category	.36 (.48)	0, 1

Continued on next page.

Table 1 continued.

Name	Measurement/description	Mean (s.d.)	Min, Max
Industry			
Manufacturing	Manufacturing = 1, reference category	.16 (.37)	0, 1
Agriculture	Agriculture, fishing, hunting, mining = 1	.02 (.44)	0, 1
Utilities	Utilities = 1	.01 (.09)	0, 1
Wholesale	Wholesale trade = 1	.03 (.16)	0, 1
Retail	Retail trade = 1	.13 (.34)	0, 1
Transportation	Transportation = 1	.04 (.19)	0, 1
Information	Information, communications = 1	.02 (.13)	0, 1
Finance	Finance, insurance, real estate = 1	.06 (.24)	0, 1
Professional	Professional, scientific, management, administrative, waste services = 1	.11 (.31)	0, 1
Education	Education, health, social services = 1	.25 (.43)	0, 1
Art	Arts, entertainment, recreation, accommodation, food services	.08 (.27)	0, 1
Public	Public administration	.05 (.23)	0, 1
Other service	Other services except public administration	.05 (.21)	0, 1

2.3.2 Methods

The analyses were performed in three steps. I first investigated the pattern of cultural sentiments, measured by EPA ratings, for the social concepts *male* and *female* and compared it to the ratings of male- and female-dominated occupations to demonstrate the congruence between cultural meanings of gender generally and with the meanings associated with occupations. Next, I examined the bivariate relationship between the occupation-level variables with particular attention paid to the predictors of income. Last, I used a series of hierarchical linear models to analyze the predictors of income while controlling for individual-level variation. These models first tested the human capital perspective with and without inclusion of the measure for complex problem solving. Next, a model tested devaluation thesis, and then a full model was utilized that included all human capital and devaluation measures. All analyses are weighted by person weight provided in the ACS.

2.4 Results

Two ideas are central to the dual-process model presented in this paper. First is the assertion that symbolic cultural meanings defining masculinity and femininity are multidimensional constructs characterized by higher evaluation (goodness, warmth, caring) for feminine concepts and higher potency (power and competence) for masculine concepts. Second, based on career selection models, occupational incumbents will be induced to select occupations that are congruent with these cultural meanings. Therefore

gendered occupational meanings should reflect the same pattern of higher evaluation for female-dominated occupations and higher potency for male-dominated occupations.

Table 2 shows that EPA ratings for the concepts *female* (1.85, 0.95, 0.90) and *male* (0.95, 1.87, 1.03) are consistent with the theorized pattern. While both men and women are viewed as good, powerful, and active, the evaluation dimension for *female* is 49 percent higher compared to *male* evaluation but 43 percent lower in potency.

Table 2: EPA Ratings for the Concepts Female and Male

	Evaluation	Potency	Activity
Female	1.85	1.31	0.62
Male	0.95	1.87	1.03
Difference	0.90	-0.56	-0.41

Regarding the meanings associated with gender-concentrated occupations, Table 3 compares descriptive statistics for the twenty occupations with the lowest and highest concentration of women. The mean EPA rating for these female-dominated occupations is (1.77, 0.49, 0.05) while that for occupations with the fewest female workers is (1.23, 0.82, 0.76). Similar to the concepts *male* and *female*, occupations as social constructs are widely perceived as good, powerful, and slightly active. With the exceptions of telemarketer, bill collector, and warden, all occupations have positive evaluation ratings and the majority of occupations have positive potency ratings. Results show that EPA ratings for female-dominated occupations have 31 percent higher evaluation but 67 percent lower potency, which is consistent with the multidimensional conceptualization

of female-dominated occupations as not only high in evaluation but also concurrently low in potency.

Table 3: Descriptive Statistics for the 20 Occupations with the Highest and Lowest Percentage of Female Workers

	Evaluation	Potency	Activity	Income	College degree
Highest % female	1.77	0.49	0.05	$25,523	31%
Lowest % female	1.23	0.82	0.76	$37,581	8%
Difference	0.53	-0.33	-0.71	-$12,058	23%

Notes: Mean income; college degree = percent of workers with college degree; excludes occupations comprising less than 0.1% of workers

In addition to EPA ratings, Table 3 shows differences in mean income and the proportion of workers within an occupation with a college degree. The results of this level of analysis are consistent with the devaluate narrative that occupations associated with gendered traits such as goodness, caring, and warmth are financially devalued. Female-dominated occupations exhibit higher evaluation and generate lower income on average than male-dominated occupations, despite 31 percent of workers in female-dominated occupations having a college degree compared to only 8 percent of workers in male-dominated occupations. However, adding the potency dimension to the narrative requires further analyses because if female-dominated occupations are not only higher evaluation but also lower potency it is unclear which dimensions, if any, directly affect income. I explored this issue by first exploring the bivariate correlations between the dependent and independent variables shown in Table 4. As predicted by both theories, the proportion of females within an occupation is negatively correlated

with income. The results of these correlations are consistent with the human capital perceptive but inconsistent with the devaluation perspective.

Table 4: Occupation-level Correlation Matrix

	Income	Percent female	Evaluation	Potency	Activity	Vocational preparation	Service orientation	Physical	Hazardous
Percent female	-.271 ***								
Evaluation	.172 *	.047							
Potency	.615 ***	-.138	.336 ***						
Activity	-.045	-.096	-.157 *	.290 ***					
Vocational preparation	.752 ***	.093	.285 ***	.589 ***	-.146				
Service orientation	.057	.486 ***	.048	.091	.033	.208 **			
Physical	-.347 ***	-.368 ***	.139	-.252 ***	.131	-.525 ***	-.200 **		
Hazardous	.082	-.519 ***	.167 *	-.027	-.007	-.156 *	-.334 ***	.543 ***	
Complex	.813 ***	-.145 *	.212 **	.646 ***	-.073	.795 ***	.204 *	-.399 ***	.011

Note: Logged income

* $p < 0.05$, ** $p < 0.01$ *** $p < 0.001$

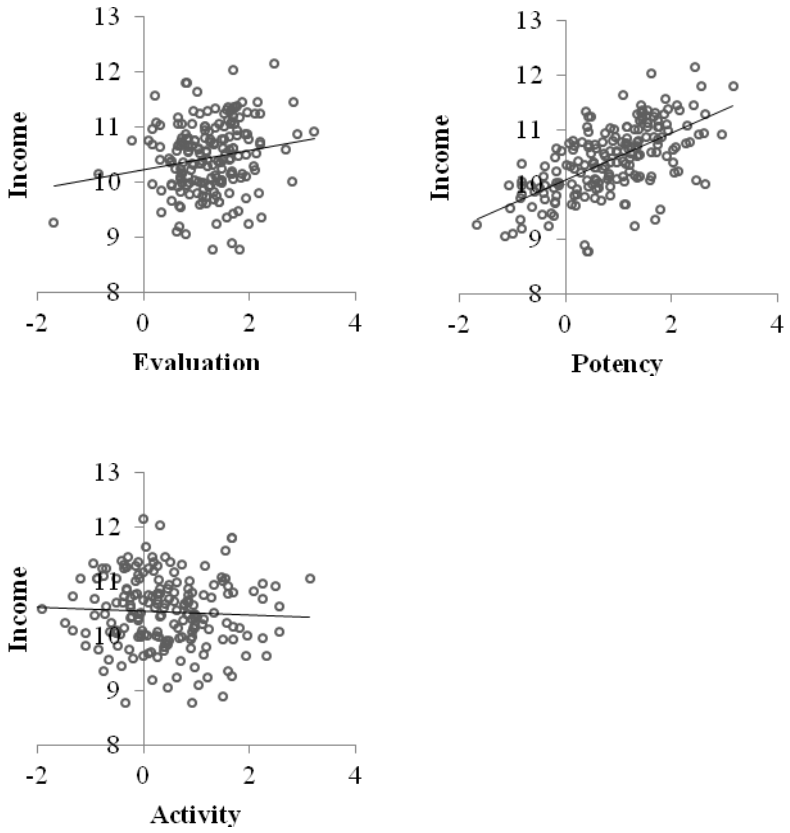
Beginning with human capital measures, the strongest predictors of income are complex problem solving skills, vocational preparation, and potency with correlations of 0.81, 0.75, and 0.62 respectively. While the link between complexity and vocational investments is explicit in human capital theory, the positive relationship between income and potency is implied for a number of reasons. First, cultural meanings reflect social structure. Occupational positions with greater power garner greater rewards, including income and privilege, which in turn affects the construction of occupational meaning (Treiman 1977). However, cultural meanings also reciprocally influence and reinforce the occupational structure. Because cultural meanings are used as reference points to assess performance, occupants in higher-status positions are generally perceived to be more competent than occupants in low-status positions, which reinforces the justification for the position of the high-status actor (Correll 2001).

The .80 correlation between complex problem solving and vocational preparation combined with the high correlation to income are consistent with the tenets of the human capital perspective that high wages reflect increased training requirements needed to address complex workplace problems. These results are also consistent with the findings of Liu and Grusky (2013) that critical thinking and problem-solving skills are particularly important in wage setting.

Turning next to cultural sentiments, the results of the bivariate correlations do not appear to support the devaluation thesis because the relationship between evaluation and potency to income is positive in both cases. Figure 1 shows that the association between evaluation and income is weak compared to potency, which exhibits a positive, linear relationship to income. Furthermore, the positive 0.34 correlation between evaluation and potency undermines the theoretical argument of devaluation that high evaluation leads to perceptions of lower power and competence. Instead, these results are consistent with research that finds symbolic dimensions tend to be positively associated with one another so that what is perceived as powerful is also viewed as good and vice versa (Heise 2007; 2010).

These results provide the first indication that the lower income for female-dominated occupations, found in Table 3, is caused not by high evaluation but lower potency. However, this conclusion requires controlling for levels of education. If workers primarily seek to maximize rewards with gender norms providing a secondary influence, devaluation would be found within occupations with similar levels of education and income. While the proportion of women obtaining a doctoral degree has dramatically increased since the 1970s, thus increasing their absolute earning potential, they continue to select the same lower-paying fields, which affects earnings relative to

similar education (England, Allison, Li, Mark, Thompson, Budig, and Sun 2007). As a result, gender norms should show a stronger influence within a given level of education.



Note: Logged income

Figure 1: Income and EPA

As shown in Table 5, a series of hierarchical linear models was used to control for individual-level differences. Model 1 examines the effect of gender without individual- and occupation-level controls. The results are consistent with both perspectives since the

concentration of women is negatively correlated to income. Model 2 tests human capital theory by examining the association between income and objective occupational characteristics including vocational preparation, service orientation, physical demands, and hazardous workplace, with model 3 adding the measure of complex problem solving. Models 2 through 5 include the full set of individual-level sociodemographics and workplace controls. The results of model 2 are largely consistent with the human capital model presented by Tam (1997) since the degree of vocational preparation was the most significant predictor of income. The degree of service orientation and physical demands were also significant and consistent with the assertion that the highest-paid occupations are those that work with abstract ideas, followed by occupations that provide service, with physically oriented occupations paying the least (Abbott 1988). Hazardous work is also significantly associated with increased pay.

Table 5: Occupation-level Coefficients for Hierarchical Linear Regression Predicting Income

	Model 1	Model 2	Model 3	Model 4	Model 5
	Gender	SVP	Complexity	EPA	Full
	Coeff (s.e.)	Coeff (s.e.)	Coeff (s.e.)	Coeff (s.e.)	Coeff (s.e.)
Percent female	.273 (.094) **	-.192 (.076) *	-.026 (.082)	-.001 (.067)	-.001 (.083)
Complex problem solving			.310 (.054) **		.226 (.053) **
Vocational preparation		.176 (.018) **	.083 (.025) **		.072 (.025) **
Service orientation		.108 (.037) *	.043 (.038)		.044 (.037)
Physical		-.052 (.023)	-.025 (.020)		-.029 (.019)
Hazardous		.061 (.025)	.042 (.023)		.049 (.023)
Evaluation				-.029 (.031)	-.007 (.023)
Potency				.234 (.022) **	.055 (.021) *
Activity				-.076 (.022) **	-.007 (.017)

Note: Level-1 N=898,066; level-2 N=190; Individual-level controls excluded in model 1 and included for models 2 through 5.
* p < 0.05, **p < 0.01 ***p < 0.001

Although the coefficients are consistent with Tam's model, gender concentration remains significant. This is likely due to the categorical measure of vocational training used in this study. Consequently, model 3 adds the measure of complex problem solving. Adding complexity to the model produces results that are very consistent with those found by Tam. The measures of complexity and vocational preparation are the only significant predictors of income in the model and can fully account for the effect of gender composition. In addition, the inclusion of complex problem solving also reduced the coefficient for vocational preparation by more than half, from 0.176 in model 2 to 0.083 in model 3. Several conclusions can be drawn. First, much of the effect of vocational preparation on income is due to the need to solve complex problems in the workplace, but even after accounting for occupational complexity vocational preparation remains an independent predictor of wages. Second, these results demonstrate the utility of skill measures in O*NET in explaining income stratification. Lastly, because service orientation, physical demands, and hazardous work also lost significance, this suggests that the significance of these variables is largely a function of varying levels of skill requirements.

Turning to the devaluation hypothesis, model 4 examines the effect of cultural sentiments on income without human capital measures. Net of individual-level controls, the effect of evaluation is negative, small, and insignificant while the effect of potency is both positive and significant. In addition, the coefficient for gender composition is reduced to nearly zero and is not significant. This is important for three reasons. First,

this is the first measure of gendered cultural beliefs that can fully account for the effect of gender composition on income net of individual-level controls. Second, it demonstrates that the current method employed by human capital proponents is inadequate. If both sentiments and occupational characteristics can account for gender composition effects, adjudication between the two perspectives requires not only accounts for income variance but also that differences are not attributable to a competing measure. Third, the significance of potency combined with the insignificance of evaluation supports the dual-process model developed in this paper. This suggests that the effect on income of feminine traits associated with goodness, caring, and warmth is indirect. While gender norms may channel women into less-potent occupations, no evidence was found of direct financial devaluation based on gendered traits. Instead, the direct effect of cultural sentiments on income comes through the dimension of potency, not evaluation. Whether potency has an independent effect on income or is simply a subjective reflection of objective occupational features is examined in model 5, which includes both subjective and objective predictors.

The inclusion of cultural sentiment measures reduces the coefficients for complexity and vocational preparation from the levels seen in model 3, but the effects of occupational characteristics remain significant. The coefficient for complex problem solving is reduced 27 percent, from 0.310 to 0.226 between models 3 and 5, while the coefficient for vocational preparation dropped only 13 percent from 0.083 to 0.072. On the other hand, the coefficient for potency drops 77 percent between model 4 and 5 from

0.234 to 0.055 but remains significant. While the potency dimension of cultural meaning continues to have a direct effect on income, the dramatic decrease suggests that perceptions of potency related to income are a function of objective characteristics. These results suggest that wages are primarily a function of vocational requirements, specifically analytic, critical-thinking skills required to resolve complex workplace problems, They also suggest that while potency does have a small, direct effect on wages, cultural meanings primarily contribute indirectly to the gender wage gap by channeling women into occupations requiring lower complex problem-solving skills net of other factors.

2.5 Conclusion and Discussion

The purpose of this study was to develop and test a dual-process model of occupational gender stratification. I argue that cultural symbolic meanings associated with social concepts, including occupations, are multidimensional constructs comprised concurrently of potency (power, competence, and prerequisites) and evaluation (goodness, caring, and warmth). Furthermore, I posit that feminine meanings are concurrently high in evaluation but low in potency, with only the potency dimension directly influencing wages. Conceptualizing evaluation and potency as separate dimensions integrates the seemingly incompatible findings of devaluation and human capital theory into a multidimensional framework in which wage setting and gender socialization are two distinct but interrelated processes. The conflation of evaluation and potency allows wage setting to be based on perceptions of competence, qualifications,

and skills, while evaluation affects income indirectly through socialization of cultural gender norms that induce women to enter occupations with lower training and skill requirements, especially complex problem-solving skills. To test this model I first combined data from the 2011 American Community Study (ACS), measures of occupational characteristics from the Bureau of Labor Statistic's Occupational Information Network (O*NET), and occupational EPA ratings found in a newly collected affective dictionary. I then explored the relationships between occupational gender concentration, cultural meanings, objective occupational characteristics, and income, first on the bivariate level then using a series of hierarchical linear models.

Several important results were found. As theorized, EPA ratings for the social concept *female* were higher in evaluation but lower in potency than ratings for the concept *male*. This relationship is mirrored in occupational ratings as occupations with the highest concentration of women were higher in evaluation but lower in potency compared to occupations with the lowest percentage of women, and is consistent with occupational selection theories that posit that people select occupations that are congruent with self-perceptions. In addition, occupations with higher concentrations of women had lower average incomes compared to occupations with the lowest percentage of women, despite the fact that 31 percent of workers in female-dominated occupations possessed a college degree compared to 8 percent in male-dominated occupations. This descriptive pattern reflects devaluation theory's position that female-dominated occupations are paid less despite high levels of educational attainment.

Consideration of the potency dimension alters this narrative. Results of bivariate correlations indicate that potency, in addition to measures of training and complex problem-solving requirements, is much more strongly correlated to income than evaluation. Contrary to devaluation theory, evaluation is positively associated with both income and potency, suggesting that evaluation is not in itself culturally devaluated. Instead, this is consistent with the Weberian ([1958]) notion that status is a form of symbolic social power embedded in cultural evaluations of respect and "value to society" (Goldthorpe and Hope 1972) that positively influence stratified life chances.

Because this relationship may be contingent on other factors including objective occupational characteristics such as education, training, and industry, a series of hierarchical linear models was used. The results indicate that EPA ratings, independent of occupational characteristics, can fully account for the occupational gender wage gap although only potency and not evaluation was significantly related to income. Similarly, the occupational characteristics of training, service orientation, physical labor requirements, hazardous work, and complex problem-solving skill requirements were significant and could also account for the gender wage gap. When both perspectives were modeled together, the effects of training and complexity were reduced by 13 percent and 27 percent respectively, while the effect of potency was reduced by 76 percent. Although potency remains significant, the large reduction in its effect suggests that potency ratings are primarily a subjective reflection of objective features, a process similar to traditional occupational prestige scores (Hauser and Warren 1997). The results

of these analyses are consistent with the dual-process model developed in this paper. Training and skill requirements directly affect income while gendered symbolic meanings indirectly affect income by influencing the distribution of female workers into occupations with lower training and skill requirements.

This study makes a number of empirical and theoretical contributions to the literature on the occupational gender wage gap. Empirically, it is the first study to employ a measure of gendered meanings that is capable of accounting for the occupational gender wage gap, which has implications for both devaluation and human capital theory. Without an adequate measure of cultural meanings, devaluation scholars have relied on a "residual method" in which earnings are modeled using theoretically relevant controls, and residual composition effects are assumed to be a product of devaluation (Tam 1997). By introducing a measure that is capable of accounting for the gender wage gap, the effect of cultural meanings can be modeled directly. This also suggests that the human capital approach is inadequate because it has not accounted for competing measures that can also account for income differences. This measure provides an empirical advancement because it allows both perspectives to be modeled and evaluated concurrently.

Conceptualizing symbolic cultural meanings in a multidimensional framework in which dimensions of evaluation and potency are distinct yet related is a theoretical advancement that makes it possible to integrate what were seemingly incompatible sets of findings. It demonstrates that cultural meanings are involved in the occupational

gender wage gap but not in the simple, direct manner currently conceptualized by devaluation scholars. Adopting unidimensional measures of symbolic meaning unnecessarily limits the range of possible theoretical explanations to those that argue for direct devaluation. They lack the degrees of freedom necessary for meanings to significantly affect the distribution of workers, the primary determinant of the wage gap, yet have no significant effect on income.

Disaggregating processes related to evaluation from potency not only bridges the current stalemate in this debate but points to future directions of research that could examine in more detail how these processes operate. Future research could analyze the relationship between objective characteristics and the construction of cultural meanings. Also, the mechanisms for how gendered meanings can affect life chances could be further explored. For example, Correll (2001) demonstrates how gendered beliefs bias self-assessments, which in turn affects early career decisions. While this is one way that cultural beliefs affect stratified outcomes, study of the relationship between the structure of symbolic meaning and stratified outcomes could lead to the discovery of other mechanisms.

3. Evaluation and Stratification: Revisiting Weber's Concept of Occupational Status

3.1 Introduction

Weber's ([1958]) concept of occupational status as social power based on shared beliefs of esteem, respect, and honor is at a crossroads. On the one hand, it is a fundamental sociological concept taught in most introductory courses, but on the other hand it is been largely supplanted in contemporary stratification research in favor of objective socioeconomic measures (Bukodi, Dex, and Goldthorpe 2011). In her 2013 ASA Presidential Address Cecelia Ridgeway (2014:2) argues that this lack of attention to status as an independent base of inequality has become a "major misjudgment that greatly limits our ability to understand how stratification actually works."

While status research has continued for more identifiable characteristics such as gender, the absence of a widely accepted measure of occupational status has undermined its use in current stratification scholarship. Prestige scores (Goldthorpe and Hope 1972; Nakao, Hodge, and Treas 1990; Treiman 1977) were previously the predominant method of operationalizing occupational status based on the assertion that they capture an occupation's "value to society" in addition to its economic value. However, the current consensus is that prestige scores lack construct validity and do not effectively measure what they claim to measure (Bukodi, Dex, and Goldthorpe 2011). Instead, because they functionally perform as error-ridden subjective estimates of occupational rewards and prerequisites, they provide little explanatory power when

objective measures are included (Featherman and Hauser 1976; Hauser and Warren 1997; Hodge, Kraus, and Schild 1982). For occupational status to be of use in stratification research a measure must be identified that is capable of operationalizing the cultural esteem associated with an occupation and then shown to be significantly related to important life chances net of objective socioeconomic features. These two tasks are the focus of this paper. In this exploratory study I first propose an alternative measure of occupational status, then examine its relationship to a variety of important stratified life-chance outcomes.

This paper integrates the social psychological approach of MacKinnon and Langford (1994) with the stratification research of Weeden and Grusky (2005; 2012). Building on the insights of MacKinnon and Langford (1994) who used the semantic differential scale to explore occupational meanings, I propose using this scale to operationalize the esteem associated with occupations. Developed by Osgood and colleagues (1975; 1957; 1990) in their cross-cultural research, this scale quantifies cultural symbolic meanings associated with social concepts, including occupational identities, along three universal affective dimensions of evaluation (good versus bad), potency (powerful versus weak), and activity (active versus quiescent). Ratings are quantified on polar scales ranging from -4.3 to +4.3 with the compilation of the three dimensions forming a concept's EPA rating or profile. EPA profiles closely align with Weber's notion of occupational status because the evaluation dimension captures cultural beliefs of esteem and goodness independent of the power and rewards captured in the potency

dimension. This measure is then integrated with the approach of Weeden and Grusky (2005; 2012) who demonstrate that within complex industrial societies a wide range of life chances must be explored because occupational features can have differing levels of influence across social domains. Following a similar typology, I categorize life chances into traditional life chance measures, cultural consumption, institutional participation, and political and social attitudes.

This paper extends the literature on occupational status in three important ways. It first develops an updated, larger, and more representative list of occupations based on the twelve SOC major occupations compared. Second, because the effect of status and objective socioeconomic measures varies across social domains (Chan and Goldthorpe 2007c; Weeden and Grusky 2012), this study broadens the scope beyond the singular focus on income and instead explores the relationship between status and a broad range of important stratified outcomes. Last and most importantly, while MacKinnon and Langford (1994) examine the relationship between EPA ratings and prestige scores, this paper directly explores the relationship between status and life-chance outcomes. This is critical because if prestige scores measure objective characteristics rather than status based on cultural evaluations of esteem, then the effect of occupational status life outcomes remains unknown. To preview the results, I find that the normative, evaluative dimension of occupational status does have a significant effect on most measures across all social domains, and that the pattern of results differs significantly from what previous research suggests.

3.2 Theory

3.2.1 Weberian Conception of Status

Ridgeway (2014) argues that there are three primary reasons why status is fundamental to understanding inequality: it stabilizes inequalities by transforming resource differences into categorical group differences (Ridgeway 1991; Tilly 1998); it fuels perceptions of class location (Bourdieu 1984); and, most importantly, it is an independent factor in generating material inequalities net of resource control. This last aspect of status, as a distinct base of inequality, most closely aligns with Weber's definition and what this paper seeks to operationalize and explore.

Weber (1946:187) defines status as a form of symbolic social power determined not by economic relations but by cultural evaluations of the "positive or negative, social estimation of honor." Although status and class frequently overlap, status is distinct because it involves meaningful communal action that is predominantly affective or traditional in nature (Gane 2005). Communal social actions are rooted in "subjective feeling of the parties, whether affectual or traditional, that they belong together" (Weber 1968). In contrast, Weber (1968:930) is clear that "a class does not in itself constitute a group (*Gemeinschaft*)" and that class interests are guided by rational calculus to maximize instrumental returns, not affective shared beliefs. While status may lead to instrumental return, its proximate effect is to orient social action and condition the preferential treatment of high-status actors. For example, occupants of high-status positions are perceived to be more competent and authoritative, and afforded more

opportunities to speak and contribute to group tasks (Correll and Ridgeway 2003; Webster and Jr. 1978). Although these advantages operate at the interactional level, these differences influence macrolevel outcomes such as hiring, promotion, and career selection (Cohen, Broschak, and Haveman 1998; Correll 2004; Morgan, Gelbgiser, and Weeden 2013).

These elements of Weber's definition of status suggest that an ideal occupational status measure should be affective/subjective, multidimensional, and cultural. First, it must be subjective in that it is based on widely held, normative evaluations of esteem, respect, or goodness associated with occupational positions. Second, it must be multidimensional in its ability to measure affective dimensions of esteem independent of perceptions of power based on objective economic characteristics. While perceptions of superiority or inferiority rooted in economic conditions may be analytically distinct from class, they remain a symbolic expression of the underlying economic structure (Bourdieu 1984) rather than a distinct, social base of inequality.

The communal nature of status is not without debate. For high-status actors to make status claims, the relative superiority, equality or inferiority of occupational roles must be widely recognized and viewed as legitimate throughout society (Zhou 2005). Tönnie (1963 [1887]) theorizes that modern societies progress from the interpersonal relationships of *community* (*Gemeinshaft*) to the more anonymous, rational-bureaucratic structures of *society* (*Gesellschaft)*. Scholars argue that the transition from agrarian economies dominated by titled aristocracy into complex capitalist economies

characterized by specialization and segmentation precludes any universally accepted master status order (Hauser and Featherman 1977). Even Shils (1968), who coined the term deference-entitlement, acknowledges that modernization attenuates deference because powerful actors seek to transform charismatic power differences into formal institutional offices and practices.

Specialization and institutionalization within the division of labor suggests that economic features, especially the deeply institutional microclass practices and structures (Grusky and Sørensen 1998; Weeden and Grusky 2005; Weeden and Grusky 2012), are increasingly influential determinants of life outcomes in modern societies. Despite this process, certain roles continue to be held in high regard and shown deferential behavior because they carry out special functions in perpetuating a society's culture. Scholars have long noted that certain occupations such as clergy, schoolteachers, and professors enjoy higher levels of prestige than predicted by their economic standing (Hauser and Warren 1997). These occupations engender respect because they are perceived to provide a value to society beyond their economic contributions and are remunerated in kind with social rather than material benefits (Hope 1982). The significance of these occupations is beginning to be recognized as a distinct category of *cultural occupations* in several occupational schemas (Australian Bureau of Statistics 2013; Canada 2011; United Nations Educational, Scientific, and Cultural Organization 2009). Despite changes to the paid labor market, these occupational roles are present in all societies because they serve to either produce, preserve, or disseminate moral or spiritual meanings, as well as

intellectual property or artistic expression that characterize a culture (Australian Bureau of Statistics 2013). The esteem associated with these occupational roles creates behavioral expectations that induce deferential social action. For example, when professors interact with students or clergy interact with congregants, displays of deference such as allowing the higher-status actor to speak without interruption provide behavioral indicators of the underlying status order. This suggests that for culturally esteemed occupations normative evaluations of goodness, respect, and value will produce deferential interactions that may in turn affect life chances. Attempting to understand to what degree this occurs and what set of life chances is affected are the central questions explored in this paper.

3.2.2 Three Dimensions of Affective Meaning

Given the criteria that an occupational status measure should be normative, multidimensional and cultural, we build off the research of MacKinnon and Langford (1994) who examine the meaning of prestige scores using the semantic differential scale developed by Osgood and colleagues (Osgood 1962; Osgood, May, and Miron 1975; Osgood, Suci, and Tannenbaum 1957). In cross-cultural research encompassing more than twenty-five countries, Osgood et al. (1975) use factor analysis to determine that social concepts evoke affective responses along three universal dimensions of evaluation (good versus bad), potency (powerful versus weak), and activity (fast versus slow or active versus inactive). Each dimension is rated on a bipolar scale from -4.3 to +4.3 with 0 being neutral. These three dimensions are compiled into an EPA profile or rating, which

represents the affective cultural meaning associated with a social concept. For example, the EPA profile for the occupation *doctor* is (2.23, 1.51, 0.59), indicating that doctors are generally perceived as good and powerful but only slightly active (Heise 2014b).

Scholars first explored EPA ratings as an occupational status measure soon after the scale's development, but the use of these ratings was overshadowed by the adoption of prestige scores (Gusfield and Schwartz 1963). This approach was revisited by MacKinnon and Langford (1994) and others who equated status to evaluation and power to potency (Heise 1987; Kemper and Collins 1990; Rogalin, Soboroff, and Lovaglia 2007). A robust literature in affect control theory (Heise 2010; MacKinnon and Heise 2010a) has demonstrated the construct validity of EPA ratings as a parsimonious and effective method of capturing cultural meanings in a diverse range of social settings, including family (Kroska 2003), work (Moore and Robinson 2006; Schröder and Scholl 2009), politics (Britt and Heise 2000), and religion (Smith-Lovin and Douglass 1992).

3.2.3 Status as an Independent Base of Social Power

Criticism of prestige scores has led scholars to develop a number of alternative measures to reinvigorate the study of occupational status, with Chan and Goldthorpe (2004; 2007c) being among the most prominent. Combining Laumann's (1965; 1973) pioneering work on social distance with Bourdieu's (1984) class conflict theory, they use multidimensional scaling of friendship ties to quantify status location. While this work has stimulated debate on status (Chan, Birkelund, Aas, and Wiborg 2011; Peterson 2007; Wuggenig 2007), their operationalization is not without issue.

While this measure captures homophily, it is not based primarily on status in the sense of esteem evaluations (Bukodi, Dex, and Goldthorpe 2011). Although occupational esteem may be involved in friendship formation, socioeconomic conditions exert a much greater influence on the organization of social life within modern, highly institutionalized societies. Early research by Grasmick (1976) confirms that economic conditions are the primary factor in friendship ties with value to society second. Similarly, the second dimension of Chan and Goldthorpe's (2004) measure is highly correlated with occupational gender segregation, with engineers and scientists on one side of their scale and child- and health-care workers on the other. While they interpret their first dimension to reflect the status order and the second to reflect the opportunity structure for workplace friendship formation, an alternative interpretation can be drawn.

Occupations with high concentrations of female workers are characterized by cultural meanings associated with esteem, goodness, and caring, such as teachers and nurses (Cancian and Oliker 2000; England and Folbre 2002). This suggests that Chan and Goldthorpe's (2004) second dimension is a reflection of the cultural beliefs of esteem, caring, and goodness that conditionally sort female workers into these occupations. If so, then the factors identified in their scaling procedure likely reflect the same EPA dimensions of affect identified by Osgood but the authors have chosen to focus on the potency dimension because of its greater explanatory power rather than on the esteem dimension. If power and status provide the two primary dimensions of microinteraction

(Kemper and Collins 1990), then it is expected that the two measures based on interaction should reflect similar dimensions. This interpretation is reinforced by the identification of their third dimension reflecting occupational *manuality* (Chan and Goldthorpe 2004:389), which parallels the final EPA dimension of activity. To what extent their three dimensions correlate with the three EPA dimensions is a question for future research, but the parallels suggest that by focusing on the first dimension that reflects power and class structure the effect of status on life changes remains largely unknown. Exploring this issue is the primary focus of this paper.

3.3 Data and Methods

3.3.1 Data

3.3.1.1 Dependent variables

The variables pertaining to demographic and life-chance outcomes were drawn from the 1990-2010 General Social Survey (GSS). The GSS is a biannual general-use survey that contains a broad array of demographic and attitudinal measures (National Opinion Research Center 2014a). Informed by Weeden and Grusky (2005; 2012), twenty-five individual-level outcome variables were grouped into three topical domains: life chance outcomes, lifestyle, and sentiments. Consistent with their schema, variables of traditional interest to mobility scholars such as family and personal income were grouped into life chances, and lifestyle measures were disaggregated into the separate subcategories of consumption and institutional participation. Although Weeden and Grusky (2005; 2012) include a fourth category for race and ethnicity, this was

unnecessary for this study because existing research demonstrates EPA ratings to be largely consistent social groups (Ambrasat, Scheve, Conrad, Schauenburg, and Schröder 2014; Heise 2010). Because we want to examine the effect of the evaluative dimension of occupational status net of background characteristics, measures for occupation, age, gender, race, and education were also included.

Data was restricted to the years 1990 to 2010 from working-age respondents aged eighteen to sixty-four. This ten-year time frame was long enough to provide a large number of cases and average out random year-to-year variability, but recent enough to reflect contemporary social and occupational conditions. In addition, the ISCO-88 occupational coding schema was used consistently throughout this period, precluding any errors that could be introduced by cross-classification (NORC 2014c). Variable names, operationalizations, and weighted descriptive statistics are shown in Table 6.

3.3.1.2 Independent variables

Occupational EPA ratings used in this study were collected as part of a collaborative research project between a large, southern public university and a private university, also located in the South, to develop a large-scale affective dictionary. Acting as cultural informants, 848 students were asked to rate a wide range of social concepts with the mean value of the three EPA dimensions representing a concept's EPA profile or rating. Similar dictionaries were collected in 1978 and 2003 at UNC-Chapel Hill and the University of Indiana respectively (Heise 2014b). Like the prior dictionaries, the current project collected EPA ratings for an extensive set of social concepts including

identities, behaviors, modifiers, and settings but greatly expands the list from 2,100 concepts in 2003 to over 7,000 concepts. The master list was divided into twenty-four modules containing approximately 300 concepts each, and was administered in random order using a computer survey program. The order in which the concepts and three dimensions were presented to the respondent was also randomized.

In addition to size, this dataset is innovative because it is the first to include a large, representative sample of occupational identities. Prior dictionaries overrepresented professional titles (MacKinnon and Langford 1994). The construction of a representative occupation list proceeded in three steps. First, high-, middle-, and low-income occupations from each of the twelve major occupational groupings of the 2010 SOC occupational schema were selected. Next, for historic comparability, the thirty core occupations from the GSS prestige module were added if not already present (Nakao and Treas 1990). Last, occupational identities from previous dictionaries were included to create a final pool of approximately 300 occupational titles.

Although occupations in the GSS were coding using the ISCO-88 classification system, the EPA dictionary was created using the 2010 SOC system to be consistent with other major datasets, including the Census and Current Population Survey (U.S. Bureau of Labor Statistics 2014b). The GSS also transitioned to the 2010 SOC schema beginning in 2012 (NORC 2014c). EPA ratings were matched to GSS occupations using the Bureau of Labor Statistics (BLS) 2010 SOC crosswalk (U.S. Bureau of Labor Statistics 2014a). Titles not in the crosswalk were matched according to job characteristics listed in the

Occupational Information Network (O*NET) provided by the U.S. Department of Labor (U.S. Department of Labor 2014b). Codes that included multiple identities such as 4222 *Receptionists and information clerks* were matched to the identity with the greatest number of occupants, in this case *receptionist*. Based on the same criteria, the EPA rating for *waitress* was matched to 5123 *Waiters, waitresses and bartenders*. This procedure matched 129 unique occupational identities to ISCO-88 occupation codes. The ISCO-88 to identity crosswalk is shown in Appendix B.

Through this procedure, 93 percent of occupational identities were matched to GSS cases. This was possible because cases in the GSS were highly concentrated within a limited number of occupations; for example, the top thirty occupations accounted for over half of all cases. Cases that could not be matched to an occupational identity were dropped from the analyses. In addition, listwise deletion based on age, gender, race, and education was used, resulting in an analytical sample of 22,691 cases.

3.3.2 Methods

Because this study focuses on the effect of the evaluative dimension of status net of other factors including power, a baseline set of background and socioeconomic controls was used for all regression models. Background controls were age, gender, and race. We controlled for occupational prerequisites and rewards using education and the potency dimension of the EPA. While education is the primary occupational prerequisite, potency reflects sources of perceived power, including income.

Three types of regression models were used contingent on the dependent variable. Linear regression was used for linear variables, binary logistic regression for binary variables, and ordinal regression for ranked categories. Because the study is primarily concerned with the effect of status relative to potency and education, which control for economic rewards and prerequisites, we focus on these three measures in our results discussion.

Table 6: Variables and Descriptive Statistics for Chapter 3

Name	Measurement/description	N	Mean	s.d.	Range
Age	Age of respondent in years	22,691	40.3	12.2	18 – 64
Female	1= Female	22,691	.53		0 – 1
Race					
White	1 = White, reference category	22,691	0.78		0 – 1
Black	1 = Black	22,691	0.13		0 – 1
Other	1 = Other race	22,691	0.09		0 – 1
Education	Highest year of school completed	22,691	13.5	2.8	0 – 20
Evaluation	Evaluation rating of occupational identity (-4.3 to 4.3)	22,691	1.29	0.61	-0.85 – 3.21
Potency	Potency rating of occupational identity (-4.3 to 4.3)	22,691	0.8	1.1	-1.40 – 2.98
Activity	Activity rating of occupational identity (-4.3 to 4.3)	22,691	0.55	0.79	-2.08 – 3.13
Dependent variables					
Life chances					
Personal income	Income in logged constant $ dollars	17,204	10.0	1.1	6.0 – 13.0
Family income	Family income in logged constant dollars	20,347	10.6	1.0	6.0 – 12.1
Full time	1 = Works full time	15,550	0.81		0 – 1
Home ownership	1 = Owns home	2,791	0.65		0 – 1
Work hours	Hours worked last week	7,131	42.1	14.2	0 - 89
Job satisfaction	Job or housework satisfaction (1=Very dissatisfied, 2=A little dissatisfied, 3=Moderately satisfied, 4=Very satisfied)	7,737	3.3	0.80	1 - 4
Stop work if rich	1= Would stop working if rich	10,389	0.31		0 – 1

Continued on next page.

Table 6 continued.

Name	Measurement/description	N	Mean	s.d.	Range
Family income opinion	Family income compared to U.S. families in general (1=Far below average, 2=Below average, 3=Average, 4=Above average, 5=Far above average)	9,146	2.9	0.86	1 - 5
Lifestyle Consumption					
Television	Hours per day watching TV	3,640	2.7	2.2	0 - 24
Newspaper	How often does respondent read newspaper (1=Never, 2= Less than once a week, 3=Once a week, , 4=Few times a week, 5=Every day)	3,513	3.7	1.3	1 - 5
Friends	Evenings spent with friends (1=Never, 2=Once a year, 3=Several times a year, 4=Once a month, 5=Several times a month, 6=Several times a week, 7=Almost daily)	2,948	3.8	1.5	0 – 7
Relatives	Evenings spent with relatives (1=Never, 2=Once a year, 3=Several times a year, 4=Once a month, 5=Several times a month, 6=Several times a week, 7=Almost daily)	2,957	3.3	1.6	0 – 7
Neighbors	Evenings spent with neighbors (1=Never, 2=Once a year, 3=Several times a year, 4=Once a month, 5=Several times a month, 6=Several times a week, 7=Almost daily)	2,941	4.6	2.0	0 – 7
Institutional participation					
Married	1 = Yes	2,689	0.58		0 – 1
Divorced	1 = Ever divorced	3,698	0.25		0 – 1
Union member	1 = Yes	6,128	0.12		0 – 1

Continued on next page.

Table 6 continued.

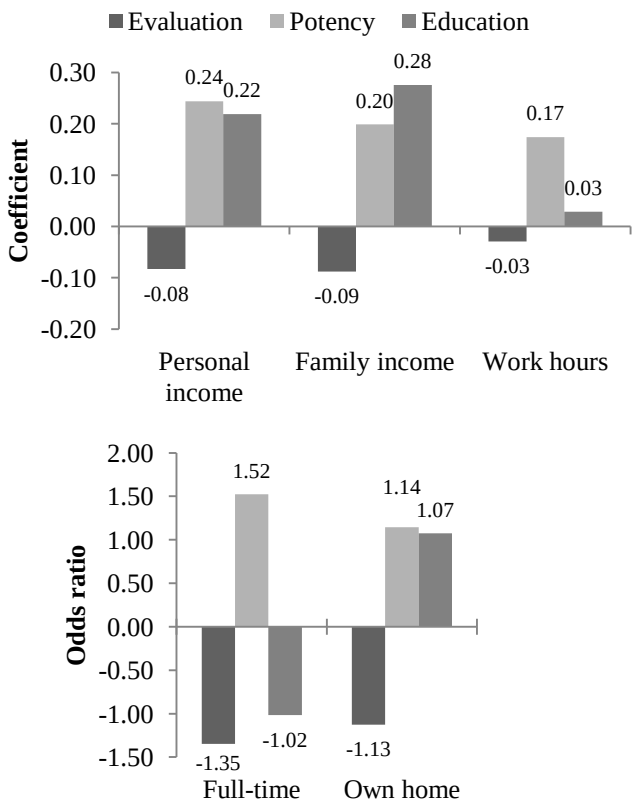
Name	Measurement/description	N	Mean	s.d.	Range
Organization member	1 = Yes	3,708	0.67		0 – 1
Church attendance	How often attend religious services (0=Never, 1=Less than once a year, 2=Once a year, 3=Several times a year, 4=Once a month, 5=2-3 times a month, 6=Nearly every week, 7=Every week, 8=More than once a week)	2,395	3.6	2.7	0 – 8
Political and social attitudes					
Political party	Strong Democrat = 1 to Strong Republican = 7 with 4 = Independent	2,186	3.9	2.0	1 – 7
Liberal/conservative	Extremely liberal = 1 to Extremely conservative=7 with 4= moderate	9,709	4.1	1.4	1 – 7
Homosexuality	1=Always wrong, 2=Almost always wrong, 3=Sometimes wrong, 4=Not wrong at all	2,021	2.1	1.4	1 – 4
Pornography	1=Illegal to all, 2= Illegal under 18, 3=Legal	2,734	1.7	0.52	1 – 3
Death penalty	1= Favor death penalty	8,121	0.73		0 – 1
Courts	1=Too harsh, 2=About right, 3=Not harsh enough	18,093	2.7	0.60	1 – 3
School prayer	1=Approve	2,377	0.44		0 – 1

3.4 Results

Life-chance variables center on economic outcomes, including income and objective and subjective features related to income. Beginning with personal and family income, Figure 2 shows that potency and education have strong positive effects on personal and family income while evaluation has a much lower, negative effect. Although Weber ([1958]) argues that status is a source of social power, the negative coefficient suggests that if workers are entering a job oriented toward providing social value, they are doing so at the expense of monetary returns. The positive effect of potency, which measures perceptions of power and competence, can be viewed as analogous to occupational prestige scores, which are primarily subjective reflections of objective job characteristics rather than an independent causal factor producing higher income.

Consistent with lower income, evaluation was also negatively associated with fewer working hours and a lower likelihood of full-time employment and home ownership. The magnitude of its effect was much greater for these two measures compared to its effect on personal and family income. One possible reason for the increased effect of evaluation on home ownership is that processes of wealth accumulation exacerbate income inequalities (Shapiro 2004; Shapiro, Meschede, and Osoro 2013). While potency remains the strongest predictor for these measures as well,

the effect of evaluation on home ownership was nearly as strong, with an odds ratio of -1.35 compared to 1.52 for potency. The effect of evaluation for these two outcomes was also larger in magnitude than education. These results demonstrate that status, operationalized by the evaluation dimension of EPA ratings, is not only significantly related to objective occupational outcomes but that its effect can be large for certain outcomes such as owning a home.

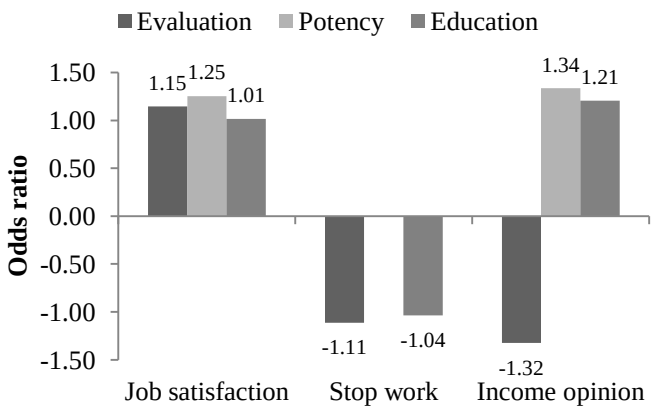


Notes: Linear regression for income and work hours. Binary logistic regression for full time and home ownership.

Figure 2: Objective Life Chance Outcome

Turning to subjective measures, Figure 3 shows that evaluation is strongly related to how respondents perceive their economic situation. Both evaluation and potency are strongly related to job satisfaction with odds ratios of 1.15 and 1.25 compared to a much more marginal effect of education with an odds ratio of 1.01. In a question measuring a respondent's subjective attachment to their work, when asked whether they would quit working if they became rich respondents who were high in evaluation and education indicated that they would not quit and continue to work. Evaluation had more than twice the effect by a factor of -1.11, compared to -1.04 for education.

This is consistent with the notion that high-status occupations are provided social returns in addition to monetary returns. In contrast, while potency was positively associated with job satisfaction, it was not a significant predictor of workplace attachment. This suggests that although higher income, reflected in the potency dimension, is a major component of workplace satisfaction, it does not provide nonmonetary attachment to work.



Notes: Ordinal regression for job satisfaction and income opinion. Binary logistic regression for stop work.

Figure 3: Subjective Occupational Outcomes

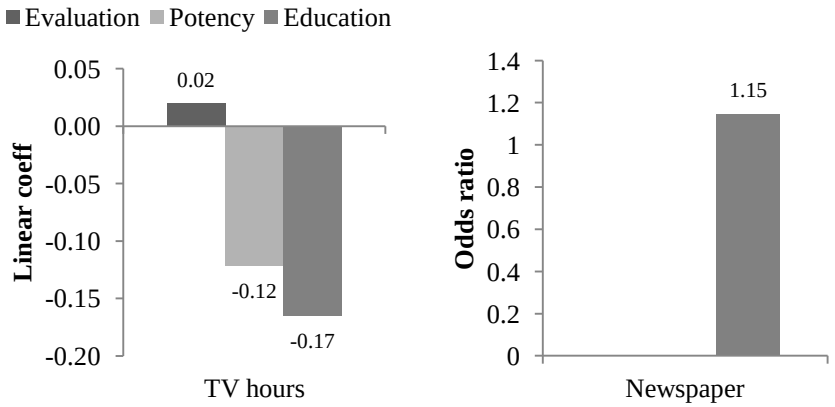
Perhaps the most intriguing result is the respondent's subjective opinion of their family income relative to their perception of the U.S. average. While the pattern was similar to personal and family income, with potency and education positively and evaluation negatively associated with income perception, the magnitude of the effect is much larger. The effect of evaluation on the objective measure of personal income was one-third of potency's effect, but evaluation and potency had nearly equal effects on subjective perceptions with odds ratios of 1.35 and -1.32 respectively. This is important because it appears that individuals in high-evaluation occupations knowingly select occupations that provide social rewards at the expense of instrumental returns. This result is consistent with Hauser and Warren's (1997) conclusion that workers in high-

evaluation occupations such as teachers or doctors appear to be paid in prestige more than dollars.

Examining the results across all life-chance measures suggests that evaluation has a much greater effect on stratified life outcomes than is evident in MacKinnon and Langford's (1994) study of prestige scores. Two important conclusions can be drawn. First, these results support the conclusion that prestige scores do not measure status in the Weberian sense of esteem (Bukodi, Dex, and Goldthorpe 2011). As a result, using them as a measure of status underestimates the significance of cultural beliefs in stratifying outcomes. Second, status had a much weaker effect on income but surprisingly strong effects on other outcomes, especially on home ownership and subjective measures. This suggests that to fully understand the effect of status, stratification scholars should look beyond the narrow focus on income and instead study a broader range of other factors including motivation and perceptions of work.

Lifestyle outcomes were divided into measures of cultural consumption and institutional participation, with the former including behavioral patterns such as newspaper consumption and social networks while the latter includes memberships in social institutions. Turning first to cultural consumption, regression results predicting television and newspaper use are shown in Figure 4. Contrary to Chan and Goldthorpe (2004), status as measured by evaluation had little to no effect on consumption patterns;

instead, the primary predictors were class measures of potency and education. Evaluation was not significantly related to newspaper consumption and had a marginal effect on hours of television viewing.



Notes: Linear regression for hours of TV viewing. Binary logistic regression for newspaper use.

Figure 4: Television and Newspaper Consumption

The nonsignificant relationship between status and newspaper consumption is important because Chan and Goldthrope's (2004; 2007c) claim of a contemporary status order is based on newspaper readership patterns. These results could be interpreted in a number of ways. On one hand, the results are consistent with Chan and Goldthorpe's (2004) concept of status as the symbolic expression of the class structure as theorized by Bourdieu (1984). Consequently, more highly educated respondents would be expected to read newspapers more but watch television less. When status is operationalized in terms of social evaluations of esteem rather than a reflection of economic conditions, it is

perhaps not surprising that, devoid of class conflict, status no longer has an effect on cultural consumption patterns. On the other hand, scholars argue that measures must specify product types, not simply frequency, in order to be able to differentiate "high" from "low" cultural consumption patterns (Chan and Goldthorpe 2007a; Peterson 2007; Wuggenig 2007). It may be that the amount of amount of newspaper and television consumption is unable to capture the effect of status dynamics. To account for this, other lifestyle measures are explored.

Paralleling the lack of significance found for television and newspaper consumption, Figure 5 shows that evaluation has no significant effect on the number of evenings spent with friends, neighbors, or relatives, while class measures of potency and education were significantly predictive.

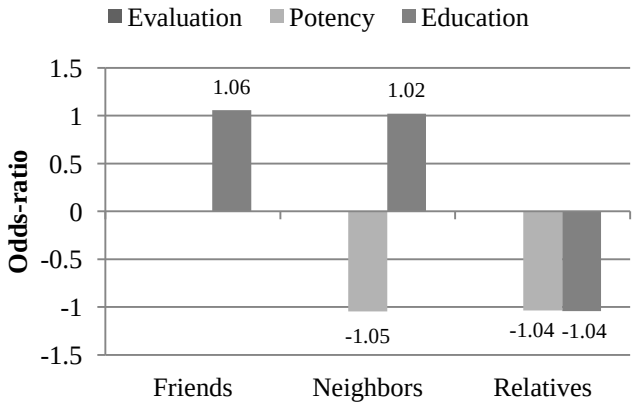
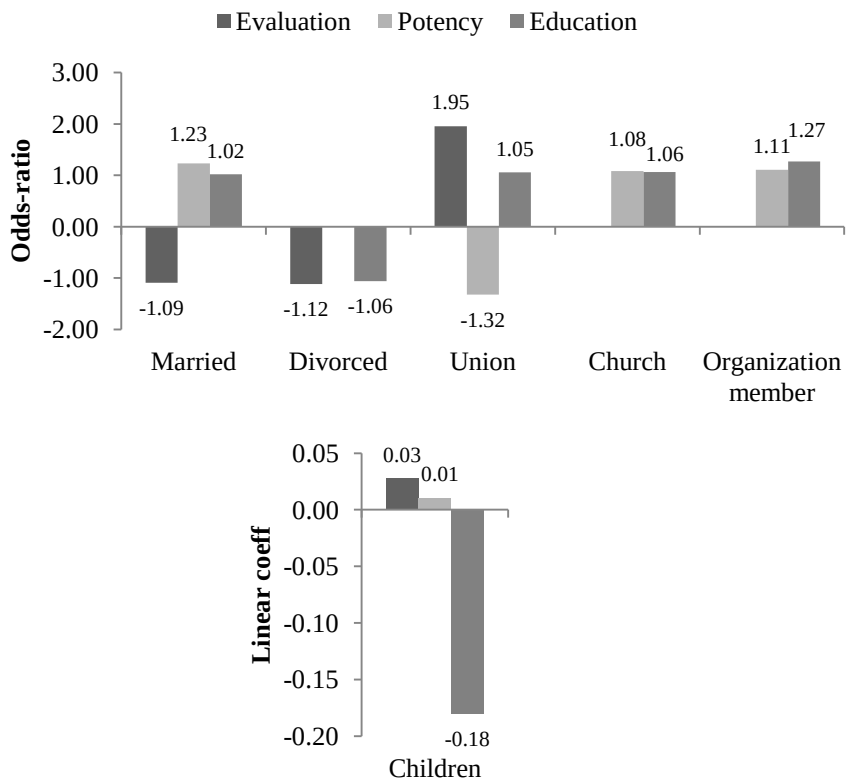


Figure 5: Ordinal Regression Predicting Evenings Spent with Friends, Neighbors, and Relatives

Results regarding institutional participation, shown in figure 6, can be divided into institutional participation inside and outside the family. Turning first to nonfamilial institutions such as church attendance and voluntary association membership provides further evidence that status does not affect patterns of social network affiliation since it was not significantly predictive of either measure, while potency and education were both significant. The one area in which status did have a significant effect was union membership. Family-related measures were composed of marriage, divorce, and number of children, with evaluation significantly related to all three. High-status respondents were less likely to be married, but once married were less likely to divorce and more likely to have more children.

Combining the results for cultural consumption, social network patterns, and institutional participation provides significant evidence that social network affiliations outside the home, which provide the basis for Chan and Goldthorpe's (2004) measure of status, are primarily a function of class homophily rather than status, defined in terms of normative estimates of esteem. Operationalizing status as positive or negative evaluations of esteem as Weber originally theorized yields markedly different results than conceptualizing it as the symbolic expression of class conflict. Instead of manifesting its effect in cultural consumption patterns rather than in objective outcomes,

status did not significantly affect consumption but instead had significant effects on objective and subjective workplace outcomes.

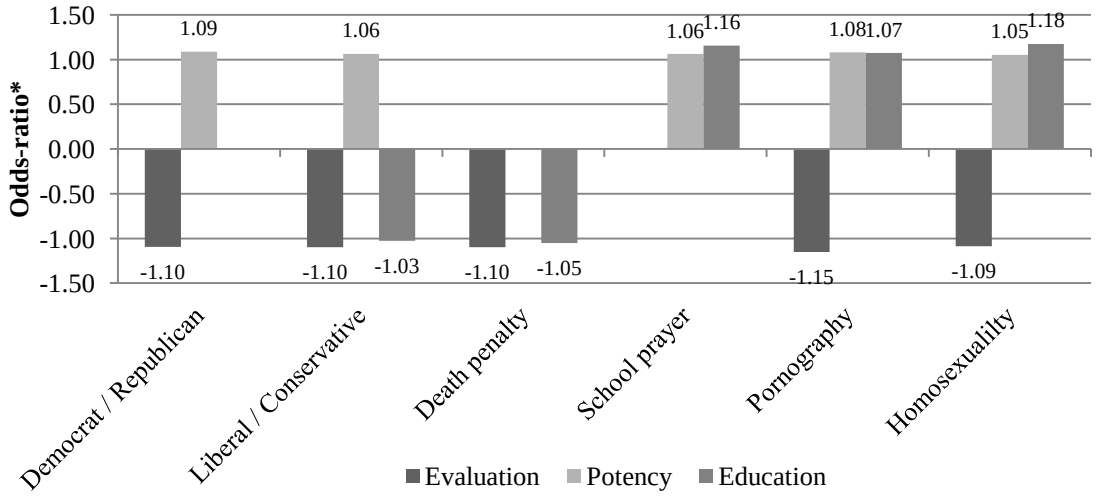


Note: Linear regression for number of children in household. Binary logistic regression for all others.

Figure 6: Institutional participation

Turning to political orientation, Figure 7 shows that high-status individuals are more likely to consider themselves liberal and Democrats. Evaluation had greater effects on these two measures than either potency or education. The effect of status was -1.10 for both party identification and ideological orientation compared to potency's effect of 1.09 and 1.06 respectively. Interestingly, education was not a significant predictor of party affiliation. Further analysis found that education was a significant predictor prior

to the addition of EPA ratings but lost significance with these measures. The significance of evaluation and potency also remained after the inclusion of personal income in addition to education. Taken together with the results for union membership, these results suggest that being employed in an occupation oriented towards "value to society" has stronger effects on one's political views than suggested by Chan and Goldthrope (2007b).



Note: Ordinal logistic regression for Democrat/Republican and Liberal/Conservative; Binary logistic regression for all others

Figure 7: Political and Social Attitudes

Although union membership, party identification, and orientation suggest that status could be interpreted along a Democrat/Republican dichotomy, results for other social opinions suggest a more complex view. High-status individuals were more likely to oppose the death penalty, legalization of pornography, and homosexuality, while

potency and education were associated with an increased likelihood of support for pornography and homosexuality. These results suggest that although they are more likely to identify as liberal or Democrats, these individuals' opinions on social issues such as pornography and homosexuality are more aligned with conservative viewpoints. One interpretation of these results is that if high-status occupations are involved in preserving and reproducing culture, then workers in these occupations would be more supportive of maintaining the current social order.

3.5 Conclusion and Discussion

The purpose of this paper was to present a measure of occupational status that more closely reflects Weber's ([1958]) definition of status as positive or negative evaluations of esteem than current measures, then examine its association with a wide range of stratified outcomes. Using EPA ratings (Osgood, May, and Miron 1975; Osgood and Tzeng 1990) that quantify cultural symbolic meanings along three universal affective dimensions of evaluation (good versus bad), potency (strong versus weak), and activity (active versus quiescent), this study operationalizes occupational status by the evaluation dimension of EPA ratings.

To explore the relationship between the cultural meanings associated with occupations and stratified life outcomes, ratings of occupational titles from a newly collected affective dictionary were combined with sociodemographic and outcomes

variables from the General Social Survey (GSS). Similar to Weeden and Grusky (2005), life-chance outcomes were grouped into traditional life-chance measures related to the workplace, lifestyle differences, and political and social attitudes. Results were discussed and compared to the prominent measure of status developed by Chan and Goldthorpe (2004).

Life-chance measures center on workplace-related outcomes including income, objective outcomes, and subjective outcomes. Results indicate that status was negatively correlated to personal income, family income, and working hours, but the magnitude of its effect was smaller than education or the potency dimension of the occupational EPA ratings. The odds ratio for status, operationalized by evaluation, was -0.08 and -0.09 for personal and family income respectively, compared to 0.24 and 0.20 for potency and 0.22 and 0.28 for education. Status did have a strong effect on the likelihood of working full time and owning a home. High-status individuals were less likely to own a home with an odds ratio of -1.13, which was almost equal to the positive effect of potency with an odds ratio of 1.14 and nearly twice the effect of education with an odds ratio of 1.07.

While status had significant but less-strong effects on objective workplace characteristics, its effect was more pronounced for subjective outcomes. It was positively related to job satisfaction and workplace attachment. Paralleling the findings regarding income, status had a strong, negative effect on subjective perceptions of income.

Combining these results suggests that individuals in high-status occupations are aware that they make less money, work fewer hours, and accumulate less wealth, yet are more satisfied and attached to their work.

Lifestyle differences, divided into cultural consumption patterns and institutional participation, are an important set of outcomes because Chan and Goldthorpe (2004) conceptualize status as a symbolic expression of the class order that manifests itself in lifestyle, particularly patterns of cultural consumption such as newspaper readership. By using an alternative measure of status, this study finds a markedly different relationship between status and lifestyle.

Results regarding television viewing and newspaper readership find little to no relationship between status and either measure. The lack of significance between status and lifestyle is reinforced by the insignificance of status in predicting the frequency of spending evenings with friends, neighbors, and relatives. Analyses regarding institutional participation outside the home also indicate that status has no significant effect on either church attendance or membership in voluntary organizations. Taken together, these results find no evidence that occupational status significantly affects lifestyle or cultural consumption patterns.

The finding that status affects workplace life chances but not lifestyle runs counter to the model of status presented by Chan and Goldthrope. This is likely because

their measure reflects the class structure while the measure used in this study reflects the social basis of status. Kemper and Collins (1990) argue that power and status form two primary dimensions of microinteraction, with power related to class features while status is based on cultural beliefs regarding deference and acceptance. By focusing on the former dimension, Chan and Goldthrope may have selected the measure most significantly related to income but they may also have inadvertently undermined the usefulness of status as an explanatory variable. Because this dimension serves as a subjective reflection of underlying economic features, it provides little utility when these objective characteristics, including income and education, can be measured directly, a criticism that has been applied to occupational prestige scores. The utility of a status measure rests in its ability to operationalize a separate, independent source of social power.

The last set of measures is composed of family participation and political and social attitudes. Regarding family relations, status was associated with a decrease in the likelihood of marriage but a decrease in the likelihood of divorce and an increase in the number of children in the household.

A strong effect of status was also seen in political and social attitudes. High-status individuals were more likely to identify as liberal and Democrats. While education was not significantly related to Democrat/Republican identification, the odds

ratio for evaluation was -1.10, indicating more Democrat identification compared to potency and an odds ratio of 1.09 indicating Republican. Interestingly, results regarding social attitudes do not align with a simple liberal/conservative dichotomy. Status was not significantly related to school prayer but it was associated with decreased support for the death penalty, pornography, and homosexuality. These results support the conclusion that occupational status is significantly related to political orientation and social attitudes and that further exploration into why this relationship exists is warranted.

Taken as a whole, the results of this study support the conclusion that occupational status has very different effects on stratified outcomes than is apparent from previous studies. By using a measure of status that more closely reflects Weber's definition of status as social power based on cultural beliefs, this study reveals that it has a significant relationship to both objective and subjective workplace outcomes, family participation, political orientation, and social attitudes. In contrast to previous studies, lifestyle measures including television and newspaper consumption and social networks had little to no association with status.

4. The Structure of Deference: Modeling Occupational Status Using Affect Control Theory

4.1 Introduction

The ability to explain a social phenomenon is contingent on being able to validly operationalize the relevant theoretical constructs. Occupational prestige scores (Goldthorpe and Hope 1972; Treiman 1977), were once widely considered a valid measure of Weber's ([1958]) notion of status as a form of symbolic social power based on cultural evaluations of respect, worthiness, and value to society, and were consequently used to theorize the relationship between cultural beliefs, structural location, and stratified outcomes. However, critics have argued that prestige scores do not measure subjective, cultural evaluations and are instead error-prone proxies of objective features that can be measured directly (Featherman and Hauser 1976; Hauser and Warren 1997). Because prestige scores do not effectively measure what they claim to measure, they provide little explanatory power or utility in contemporary stratification research (Bukodi, Dex, and Goldthorpe 2011).

Without a valid method of operationalizing cultural beliefs, the study of how occupational-status beliefs affect stratified outcomes has largely been abandoned in favor of exploring objective determinants (Bukodi, Dex, and Goldthorpe 2011). Attempts to construct new subjective measures (Chan and Goldthorpe 2007c; Jencks, Perman, and

Rainwater 1988) have been largely unsuccessful because they are not modeling status in the Weberian sense of symbolic cultural beliefs independent of class distinctions. The lack of a widely accepted status measure limits our ability to theorize the relationship between cultural beliefs, occupational positions, and stratified life-chance outcomes.

To address this, I use affect control theory (Heise 2007; MacKinnon and Heise 2010a; Smith-Lovin and Heise 1988b), a general theory of social action, to construct an occupational status scale. Based on theoretical arguments that widely held perceptions of status lead to structured relations of deference behavior (Ridgeway 1991; Shils 1982), I model the affective incongruity or deflection created when one occupational identity defers to another based on quantitative measures of symbolic, cultural meanings. If status beliefs are grounded in and diffused through deferential behavior (Mark, Smith-Lovin, and Ridgeway 2009; Ridgeway, Boyle, Kuipers, and Robinson 1998; Ridgeway, Li, Erickson, Backor, and Tinkler 2009), then modeling expectations of deferential action should provide a theoretically sound measure of occupational status.

Affect control theory (ACT) posits the relationship between social concepts including identities, behaviors, emotions, and settings in a quantitative framework. It assumes that people seek to maintain cultural meanings and that any inconsistency created by events during social interactions create affective deflection, which actors seek to remedy through subsequent behavior. Symbolic meanings associated with social

concepts are quantified using the semantic differential scale developed by Osgood and colleagues (Osgood 1962; Osgood, May, and Miron 1975). During their cross-cultural research, Osgood et al. (1975) found using factor analysis that social concepts evoked affective responses along three universal dimensions of evaluation (good versus bad), potency (powerful versus weak) and activity (lively versus quiescent). Each dimension is rated on a bi-polar scale from -4.3 to 4.3 with zero being neutral with the compilation of these three dimensions representing a concept's EPA rating or profile. EPA profiles quantify a concept's enduring affective meaning or fundamental sentiment which serves as cultural references that orient social action.

During social interactions, events can create transient impressions or feelings during the interaction that diverge from stable sentiments. For example, the EPA rating for mothers of (2.52, 1.5, -0.13) suggests that they are considered as very good, slightly powerful but not very lively. If a mother hits or neglects her child, this creates a less positive impression of the mother. Affect control theory posits that the actors will seek to restore fundamental meanings through subsequent action.

The degree that transient impressions produced by an event diverge from enduring fundamental sentiments is calculated using impression formation equations (Smith-Lovin and Heise 1988b). To develop these equations, concepts are first rated in isolation then within the context of a series of positive and negative interactions to

determine how events disturb people's perceptions of actors and behaviors. Multivariate regression analysis is then used to predict impressions from behaviors and sentiments. These equations can be used to compute the degree of deflection that predicts the subjective likelihood of an event with less likely events creating greater deflection (Heise 2007). For example, when actors perform behaviors that are incongruent with cultural sentiments such as a mother hurting a child or a powerful actor deferring to weak actor, greater deflection in created.

If status leads to structured relations of deferential behavior then the degree of deflection created during the interaction of an occupational identity deferring to another provides an indicator of the underlying status order. In this study, a new status measure is developed to computing the mean level of deflection created during the event of one occupational identity deferring to another for all possible combinations of 125 occupational identities in a newly collected dictionary of affective meaning.

This deflection scale is then tested for construct and criterion validity. Because status is based on widely held perceptions of occupational prestige, I first compare deflection and traditional prestige scores to prestige rankings based on public opinion polls conducted by Harris Interactive between 2005 and 2009 (Corso 2009). Criterion validity is then explored by evaluating whether deflection scores can predict the following five important subjective workplace outcomes: 1) attachment, 2) job satisfaction, 3) happiness, 4) respect, and 5) the relative importance of meaning and a

sense of accomplishment at work. To preview the results, according to both deflection and Harris scores the highest ranked occupations were society-serving occupations such as firefighters, doctors, nurses, and teachers, while according to traditional prestige scores prestige was primarily determined by education. In addition, deflection scores were significantly related to the ranking of occupations found in the Harris Poll. In addition, deflection scores where significantly predictive of all five workplace outcomes net of sociodemographic controls for age, gender, race, education, and income.

4.2 Theory

4.2.1 Status Value and Deferential Interaction

Weber ([1958]:187) theorized that social status, defined as "a specific, positive or negative, social estimation of honor," represents an independent source of inequality. In contrast to the class structure defined by labor market relations, the status order is defined by the structure of perceived, and to some degree accepted, cultural sentiments regarding the degree of esteem, respect, and worthiness attributed to social positions. Status beliefs are shared cultural sentiments regarding the relative superiority, equality, and inferiority of members of social groups (Fişek, Berger, and Norman 1991; Ridgeway and Erickson 2000; Webster and Jr. 1978). Diffuse beliefs of social worth and competence influence individual life outcomes by structuring relations of deference and influence (Ridgeway 1991; Shils 1982).

Goffman (1956:477) defined deference as the "symbolic means by which appreciation is regularly conveyed *to* a recipient *of* this recipient. [emphasis in original]" This not only places the enactment of the status order at the level of interpersonal interaction, it also implies that patterns of deferential behaviors reflect "the wider society outside the interaction, to the place the individual has achieved in the hierarchy of this society" (Goffman 1956:492). Shils (1982:158) argued that status beliefs are particularly important in interaction because deferential behaviors are seldom overt but instead survive "in attenuation, in a pervasive, intangible form which enters into all sorts of relationships through tone of speech, demeanor, precedence in speaking, frequency and mode of contraction, etc." Research affirms this theoretical assertion, finding that high-status actors are viewed as more competent, given more opportunities to speak, and evaluated more positively when they do act.

Status beliefs are distinct from other forms of in-group bias because all groups, including disadvantaged group members, agree or at least concede that members of one category are diffusely "better" than another (Berger, Ridgeway, and Zelditch 2002; Ridgeway, Boyle, Kuipers, and Robinson 1998). Status beliefs are also distinct because they are not based on how groups perceive themselves but on beliefs about what "most people" or a generalized other thinks (Berger, Ridgeway, and Zelditch 2002; Ridgeway and Erickson 2000). Even if members of a disadvantaged group do not belief a status

belief is valid, the fact that they believe that "most people" believe it is enough to influence expectations. Status construction theory, developed by Ridgeway and colleagues (Ridgeway 1991; Ridgeway, Boyle, Kuipers, and Robinson 1998; Ridgeway and Erickson 2000; Ridgeway et al. 2009), posits how status beliefs constructed for nominal categories such as gender, race/ethnicity, or occupation are diffused throughout society through structurally constrained interaction.

4.2.2 Status Construction Theory

Status construction theory argues that social interaction serves a central role in the formation and diffusion of status beliefs. When members of opposing sides of a social categorical distinction interact to achieve shared goals, structural conditions such as resource differences shape the interaction and influence and deference hierarchies are likely to develop as a result. If the categorical difference is salient and the real origins of the influence hierarchy are unknown, some participants will associate differences in worthiness and competence in the interaction with the categorical difference. Repeated interactions involving deference behavior between members of the difference categories will induce some participants to form generalized status beliefs regarding the social categories. These participants will then carry newly formed status beliefs into subsequent interactions and, by acting on these beliefs in the new setting, induce others to adopt these beliefs. By creating local realities, repeated deferential interactions

between group members create a diffusion process that widely and consensually spreads status beliefs.

In experiments using gender, Ridgeway et al. (2009) demonstrate how easily categorical differences can become status distinctions. They find that men and women formed equally strong status beliefs from as little as two encounters with one another. Although men acted more powerfully on these beliefs in subsequent interactions, women were just as likely as men to treat someone in an unequal manner based on these beliefs.

Given that status is a form of social power embedded in cultural beliefs that "gives rise to structured relationships of deference, acceptance and derogation," an ideal occupational status measure is one that maps the likelihood that one occupation would defer to another using measures of cultural symbolic meanings (Goldthorpe and Hope 1972:2). Goffman (1956 :478) suggested this is one way to study the status order because patterns of deferential action can be interpreted as the symbolic expression of the underlying status order. Adopting this interactional approach, I use affect control theory to construct a deference scale that quantifies the likelihood that one occupational identity will defer to another, followed by tests of its construct and criterion validity.

4.2.3 Affect Control Theory

Affect control theory (ACT) is a quantitative, general theory of social action that uses shared cultural meanings to link social identities, actions, settings, and emotions (Heise 2007; MacKinnon and Heise 2010a; Smith-Lovin and Heise 1988b). It assumes that people respond affectively to events and will act to maintain culturally held sentiments regarding the social identities and actions that occur during an interaction. As a general sociological theory, it has been used to examine a wide range of topics including family (Kroska 2003), religion (Smith-Lovin 1992), gender ideology (Kroska and Elman 2009), law (Tsoudis and Smith-Lovin 1998), and social movements (Britt and Heise 2000).

Cultural sentiments are stable reflections of how people perceive the social world and serve as references for understanding, setting expectations, and performing social action. When people enter social interactions, they define the elements of the interaction using socially constructed verbal labels, such as a *patient* visiting a *doctor* at a *clinic*. The application of predefined labels invokes cultural expectations that constrain acceptable behavior. Doctors are expected to examine patients, but if he or she fails to adequately perform this task or if the patient tries to examine the doctor these events disturb the actors' understanding of the interaction, creating an affective disturbance called deflection. ACT assumes that people seek to minimize deflection by performing new behaviors to restore enduring cultural meanings. In the case of a patient examining a

doctor the patient may say that he or she was merely joking, which allows both actors to carry on socially expected behaviors.

ACT uses quantitative measures of cultural sentiments and mathematical equations to specify the meaning maintenance process. ACT operationalizes cultural sentiments using the semantic differential scale developed by Osgood and colleagues (Osgood 1962; Osgood, May, and Miron 1975; Osgood, Suci, and Tannenbaum 1957). In cross-cultural research involving more than twenty-five countries, Osgood et al. (1975) used factor analysis to determine that social concepts evoked affective responses along three universal, affective dimensions of evaluation (good versus bad), potency (powerful versus weak), and activity (fast versus slow or active versus inactive). Each dimension is rated on a bi-polar scale from -4.3 to 4.3 with zero being neutral. The compilation of these three dimensions represents a concept's EPA rating or profile, and quantifies its enduring affective meaning or fundamental sentiment. For example, the mean EPA rating for a *doctor* is (2.23, 1.51, 0.59) meaning that doctors are generally viewed as good and powerful but not very active (Heise 2014b). In contrast, *librarians* (1.36, -0.49, -1.77) are perceived as not only less good but also weak and much less active.

ACT specifies the process of meaning maintenance using mathematical impression formation equations. It predicts how events alter transient impressions

occurring within the interaction from behaviors and fundamental sentiments. ACT assumes that the basic unit of interaction involves an actor (A), a behavior (B), and an object (O), which can be abbreviated as ABO. To develop the equations, survey respondents are first asked to rate concepts in isolation, referred to as out-of-context ratings. They then rate a series of events using all combinations of positive and negative values of ABO, with ratings referred to as in-context ratings. Multiple regression analysis then is used to predict in-context ratings from out-of-context ratings for all interaction elements. The resulting equations can be used to predict how events alter cultural sentiments. For detailed descriptions of this procedure see Smith-Lovin (1988) and Heise (2007).

Deflection is the squared difference, calculated using the impression formation equations, between the transient impression produced by the event and the fundamental sentiments for the event elements (Heise 1979) and is inversely proportional to the likelihood of an event (Heise and MacKinnon 1987). In other words, events that generate greater deflection are perceived to be less likely to occur, given cultural meanings. For example, the event that a *mother* (A) *caresses* (B) a *baby* (O) produces a low deflection of 1.6, implying that *mothers* are likely to perform this behavior on the recipient. In contrast, if she *punches* or *kills* the baby, this produces large deflections of 6.1 and 11.0 respectively

because these behaviors are incongruent with the cultural meanings held for *mothers* and *babies*.

4.2.4 Construction and Validation of the Deflection Scale

By applying these equations to occupational identities, ACT can be used to predict the deflection produced when one actor *defers to* another. For example, the deflection created in the event that a *surgeon* (2.96, 3.17, -0.44) *defers to* (-0.42, 0.03, -0.55) a *coal miner* (0.96, 0.13, 0.78) is 8.6, while the converse event in which a *coal miner defers to* a *surgeon* produces a lower deflection of 6.5. If deferential action is viewed as an expression of the underlying status order, then deflection provides a quantitative indicator of occupational status. The greater deflection created when a *surgeon defers to* a *coal miner* implies that *surgeons* are widely perceived to have greater status than *coal miners* according to the meanings of the interaction elements. A hierarchical occupational status scale can then be calculated by computing the mean deflection for all possible combinations of occupations. Occupations with greater mean deflection scores would have greater status because they seem less likely to defer to other occupations. Impression formation equations used to compute deflection come from the computer program *Interact* (Heise 2012). *Interact* provides an interface that allows users to simulate interactions based on affect control theory. The equations found in *Interact* were entered into Excel automate the deflection calculation. Details regarding the sample of

occupational identities used in this study are discussed further in the data and methods section.

Because status beliefs are widely held cultural sentiments, the construct validity of this new scale rests on its ability to operationalize what people widely believe are the most prestigious occupations. To measure popular beliefs, I used data from public opinion polls conducted by Harris Interactive that asked respondents to rate the level of prestige associated with a set of occupations (Corso 2009). Details of the sample and data collection methodology are provided in the data and methods sections. To be valid, an occupational status scale must not only significantly predict the hierarchical ordering of occupations according to the poll data but must also be consistent with theoretical definitions of status.

Analyses of poll data find that occupational prestige is not contingent on high pay but on perceptions of respect and service to society (McNerney 2008; Newland 2005). This pattern is epitomized by the occupations of *firefighters*, the highest ranked occupation according to the Harris Poll (Corso 2009). While not the highest-paid workers, firefighters engender a great deal of respect and are perceived to provide selfless service, especially following their response to the terrorist attacks on 9/11. Operationalized by EPA dimensions, this implies that deflection scores must be

primarily predicted by the evaluation dimension that captures goodness rather than potency that measures power.

In addition to construct validity, a new scale must also have criterion validity; it must significantly predict theoretically relevant outcomes that an occupational status measure should theoretically predict. To provide utility, a subjective measure must be a significant predictor independent of sociodemographic characteristic. Occupational prestige scores correlate with many important outcomes but because they are primarily a function of education and income, they provide little utility when these characteristics are also modeled.

If occupational status is a function of respect and providing value to society, then the deflection score developed in this study should significantly predict important workplace outcomes including respect and workplace attachment. Using data from the General Social Survey (GSS), I examine whether deflection scores can significantly predict, net of socio-demographic controls, five important outcomes: respondent ratings of job satisfaction, happiness, whether they receive respect at work, the importance of meaning in their work, and whether respondents would continue working even if they were rich.

4.3 Data and Methods

4.3.1 Dependent Variables

Two sets of dependent variables were used to investigate the construct and criterion validity of the deflection scale developed in this study. Public opinion poll data is used to test construct validity while workplace outcome data to test criterion validity was drawn from the General Social Survey (NORC 2014a). Because the Harris Poll surveys people's beliefs about occupations, the unit of analysis for construct validity testing is at the occupation level. Criterion validity testing uses data from the General Social Survey (GSS) with the unit of analysis at the individual level.

Harris Interactive began polling the public on their opinion of occupational prestige beginning in 1977, with annual surveys conducted between 2000 and 2009 (Corso 2009). Polls were administered by telephone to approximately 1,000 adults (aged eighteen and over) in each annual sample. Proportional weights were used to maintain representativeness based on age, gender, race, education, number of adults, number of voice/telephone lines in the household, region, and size of place. Respondents were read a list of twenty-three occupations and asked: "For each, would you tell me if you feel it is an occupation of very great prestige, considerable prestige, some prestige, or hardly any prestige at all?" Harris prestige ratings used in this study were computed as the

mean percent of respondents that selected "very great prestige" for each occupation in the last five years of poll data, with results shown in Table 8.

Workplace outcome measures testing criterion validity came from the General Social Survey (GSS). The GSS is a general-use survey, administered by the National Opinion Research Center (NORC), that biannually collects data on core background, behavioral, and attitudinal questions with additional topical modules administered in specific years (NORC 2014a). Data is limited to adults (eighteen years of age and older) for the years 1990 to 2010. This time frame provides a sufficiently large pool of cases while being recent enough to reflect current occupational conditions. Data for 2012 was excluded to minimize error introduced in the switch from the ISCO-88 occupational coding scheme (NORC 2014b) used in this study to the 2010 SOC schema used in 2012 (NORC 2014c). Deletion of cases missing data on age, education, race, or occupation resulted in an initial sample of 28,599. Variable measurement and descriptive statistics are shown in Table 7.

The following five theoretically relevant subjective workplace outcome measures were selected to test the criterion validity of the deflection scale: 1) whether the respondent would stop working if they were rich, 2) job satisfaction, 3) happiness, 4) the importance of meaning in their work, and 5) if they felt respected at work. Because status provides a source of cultural value independent of monetary rewards (Huberman,

Loch, and Önçüler 2004), workers in high-status occupations should receive subjective rewards leading to greater attachment, job satisfaction, and respect.

The question asking respondents if they would continue working if they became rich is used to measure nonmonetary, subjective workplace attachment. This question asks, "If you were to get enough money to live as comfortably as you would like for the rest of your life, would you continue to work or would you stop working?" This question was asked in each year of the dataset used in this study and is operationalized as a binary variable coded 1 if the respondent indicated that they would continue to work if they became rich.

Questions regarding job satisfaction, happiness, the importance of meaning in work, and respect were measured as ordered categorical responses. Job satisfaction was measured by the question asking respondents, "On the whole, how satisfied are you with the work you do?" The general happiness question asks, "Taken all together, how would you say things are these days? Would you say that you are very happy, pretty happy, or not too happy?" Questions on job satisfaction and happiness were administered in each survey year of the dataset. To measure respect, respondents were asked in 2002, 2006, and 2010, to indicate the degree that they agree or disagree with the statement "At the place where I work, I am treated with respect."

Table 7: Measures and Descriptive Statistics for Chapter 4

Measure	Coding	N	Min	Max	Mean	SD
Age	Years	25,947	18	89	45.1	6.5
Education	Highest year of school completed	25,947	0	20	13.3	2.97
Female	Female = 1	25,947	0	1	.53	
White	White = 1 (reference category)	25,947	0	1	.79	
Black	Black = 1	25,947	0	1	.13	
Other	Other race = 1	25,947	0	1	.08	
Evaluation	Evaluation rating (-4.3 to 4.3)	25,947	-.85	3.21	1.32	.60
Potency	Potency rating (-4.3 to 4.3)	25,947	-1.07	2.93	.81	1.08
Activity	Activity rating (-4.3 to 4.3)	25,947	-2.08	3.13	.57	.77
Deflection	Mean deference deflection	25,947	2.01	10.21	3.72	1.23
Prestige score	Occupational prestige score	25,947	17	86	43.7	14.0
Income	Logged constant $US	17,554	6.00	12.98	10.0	1.12
Work full time	Full-time employment	15,955	0	1	.79	
Stop work if rich	Would continue working if rich = 1	10,534	0	1	.69	
Happiness	General happiness (1=not too happy, 2=pretty happy, 3=very happy)	22,061	1	3	.22	.62
Job satisfaction	On the whole, how satisfied are you with the work you do? (1=very dissatisfied, 2=little dissatisfied, 3=moderately satisfied, 4=very satisfied)	18,238	1	4	3.30	.79
Respect	At the place where I work, I am treated with respect. (1=strongly disagree, 2=disagree, 3=agree, 4=strongly agree)	4,258	1	4	3.31	.66
Meaningful job	Work important and feel accomplishment (1=fifth, 2=fourth, 3=third, 4=second, 5=most important)	4,098	1	5	3.89	1.28

The importance of performing meaningful work was asked as part of a topical model on workplace values administered in 1990, 1991, 1993, 1994, and 2006. Respondents were presented the following five job characteristics: 1) work that is important and gives a feeling of accomplishment, 2) high income, 3) no danger of being fired, 4) short working hours, and 5) chances for advancement. They were then asked, "Would you please look at this card and tell me which one thing on this list you would most prefer in a job? Which comes next? Which is third-most important? Which is fourth-most important?" Kalleberg and Marsden (2013) found that although the relative importance of income and job security has increased over time, importance and a sense of accomplishment remained the most important job characteristic in all survey periods. Variable operationalization and descriptive statistics are shown in Table 7.

4.3.2 Independent Variable

The primary independent variable is the deflection scale developed in this study. Occupational EPA ratings used to construct the scale came from a newly collected affective dictionary created in a collaboration between a large, southern public university and a private university also located in the South. Acting as cultural informants, 848 students were asked to rate a wide range of social concepts with the mean value of the three EPA dimensions quantifying a concept's EPA profile or rating. Similar dictionaries were collected in 1978 and 2003 at UNC-Chapel Hill and the

University of Indiana respectively, with similar dictionaries collected in Germany, Japan, Canada, and China (Heise 2014b). Consistent with prior dictionary projects, the current project collected EPA ratings for a wide range of social concepts including identities, behaviors, modifiers, and settings. The concept list was administered using twenty-four separate survey modules containing approximately 100 concepts each. Surveys were administered using a computer survey program that randomized the order that the concepts and the three EPA dimensions were presented to the respondent.

Because prior dictionaries were found to overrepresent professional occupations (MacKinnon and Langford 1994), a three-step procedure was used to develop a representative list of occupational titles for this dictionary. First, high-, middle-, and low-income occupations from each of the twelve major occupational groupings of the 2010 SOC occupational schema were selected (U.S. Bureau of Labor Statistics 2014b). Next, for historic comparability the thirty core occupations from the GSS prestige module were added if not already present (Nakao and Treas 1990). Last, to examine meaning change over time, occupational identities from previous dictionaries were included to create a final list of approximately 300 occupation-related identities.

This pool of occupational identities was matched to occupational titles found in the GSS data set. Although occupations in the GSS uses the ISCO-88 classification system, the EPA dictionary was created using the 2010 SOC system to be consistent with

other major datasets, including the Census and Current Population Survey (U.S. Bureau of Labor Statistics 2014b) and the GSS starting in 2012. When possible, EPA ratings were matched to GSS occupations using the Bureau of Labor Statistics (BLS) 2010 SOC crosswalk (U.S. Bureau of Labor Statistics 2014a). Titles not in the crosswalk were matched according to job characteristics listed in the Occupational Information Network (O*NET) provided by the U.S. Department of Labor (U.S. Department of Labor 2014b). Codes that included multiple identities, such as 4222 *Receptionists and information clerks*, were matched to the identity with the greatest number of occupants, in this case *receptionist*. A similar criterion was used to match gender-specific titles such as *waitress* for 5123 *Waiters, waitresses and bartenders*. This procedure matched 125 unique occupational identities from the original pool of 300 occupational identities. EPA ratings were matched to 91 percent of GSS cases due to worker concentration in a limited number of occupations. Cases that could not be matched to EPA profiles were dropped from the study, resulting in an analytic sample of 25,947. The crosswalk of ISCO-88 occupation codes to EPA identities is shown in Appendix C.

Traditionally, EPA ratings are provided for male and female respondents with separate impression formation equations derived for each set of ratings. Because males and females within a cultural process impressions similarly, the resulting equations are also largely the same (Britt and Heise 1992). As a result, male equations were used to

compute deflection since there was no significant difference between male and female equations. For this study, survey ratings for male and female respondents were pooled to compute a gender-averaged EPA profile.

Data on occupational prestige scores used in comparisons also come from the GSS (Davis, Smith, Hodge, Nakao, and Treas 1991; Nakao and Treas 1990). This study uses prestige scores operationalized in the variable PRESTG80. For details regarding the computation of prestige scores see Nakao and Treas (1990).

4.3.3 Methods

Construct validity was examined in three steps with results for deflection scores compared to prestige scores. The first step was a comparison of occupational status rankings according to the Harris Polls, deflection and prestige scores. This step explored whether deflection and prestige score produced rankings that were similar to that found in Harris Poll data. The second step examined the ability of deflection and traditional prestige scores to predict Harris Poll occupational rankings. First, deflection and prestige scores were matched to the twenty-three occupations in the Harris Polls, then linear regression was used to predict Harris prestige scores from deflection and prestige scores.

Because the number of occupations used in the previous step is small, a third step examined the relationship between EPA dimensions for deflection and prestige

scores using all cases found in the GSS data set. If status is based on cultural beliefs pertaining to goodness and value to society rather than economic power, then a valid occupational status measure should primarily be predicted by the evaluation dimension, with potency a less-important dimension. For this step, linear regression was used to determine the relative importance of each EPA dimension in predicting deflection and prestige scores.

It should be noted that the focus of this study is to construct and test an occupational status measure using only occupational identities and the action to "defer to." Because differential expectations may be based on a variety of characteristics depending on the situation, the structure of status beliefs in contexts other than occupations may differ from the meaning structure found in this study.

Turning to criterion validity, a series of regression models examined the ability of deflection scores to significantly predict the dependent outcomes net of sociodemographic controls. A central criticism of prestige scores is that they provide little explanatory power when objective features, particularly education and income, are included in analyses (Hauser and Warren 1997). For a subjective measure to provide utility in stratification research it must have an independent effect net of objective features. To account for this, a baseline set of controls was included in these models that includes age, gender, race, education, and income. Because the question asking whether

the respondent would quit work if they were rich is a binary variable, binary logistic regression was used. Because the other four questions (job satisfaction, happiness, meaningful work, and respect) are ordered categories, ordinal logistic regression was used.

4.4 Results

The ranking of occupations according to Harris Polls shown in Table 8 and is consistent with theoretical assertions that status is based on cultural value and perceptions of providing a service to society (Goldthorpe and Hope 1972; Hope 1982; Wegener 1992). High status occupations such as firefighters, doctors, nurses, and teachers share a common service orientation but, with the exception of doctors, are not the most highly paid. This pattern is also consistent with the finding that prototypical female occupations, such as nurses and teachers, appear to be paid in higher prestige than dollars (Hauser and Warren 1997). In contrast, occupations with the lowest prestige are those oriented toward monetary gains, such as banker, accountant, and stockbroker.

Table 8: Harris Poll Score

Occupation	Prestige
Firefighter	59.8
Scientist	55.4
Doctor	54.6
Nurse	52.2
Teacher	51.2
Military officer	49.8
Police officer	43.8
Clergy	39.8
Farmer	38.5
Engineer	35.4
Member of congress	27.2
Architect	26.8
Lawyer	22.2
Athlete	20.6
Business executive	16.0
Entertainer	16.0
Journalist	15.6
Union leader	15.0
Banker	14.6
Actor	13.6
Accountant	13.4
Stockbroker	10.8
Real estate agent	6.2

To compare this pattern to traditional prestige scores and deflection, Table 9 shows the ten highest status occupations according to each scale. Starting with an examination of prestige scores, in contrast to opinion poll rankings, the highest-ranked occupations fall exclusively within the well-paid major occupation grouping of *professionals* (International Labor Organization (ILO) 2014). This category is characterized by high levels of professional knowledge and experience, which is reflected in the requirement of advanced degrees for doctors, professors, lawyers, and

Table 9: Occupational Status by Prestige Scores and Deflection

Prestige scores			Deflection		
Occupation	ISCO-88	Prestige	Occupation	ISCO-88	Deflection
Doctor	2221	84	Firefighter	5161	10.21
Computer programmer	2131	74	Veterinarian	2223	7.35
Professor	2310	74	Nurse	2230	7.27
Scientist	2211	73	Medical doctor	2221	6.89
Dentist	2222	72	Elementary teacher	2331	6.68
Chemical engineer	2146	71	Athlete	3475	6.60
Judge	2422	71	Cook	5122	5.91
Lawyer	2421	69	Teacher	2321	5.87
Civil engineer	2142	69	Professor	2310	5.68
Psychologist	2445	69	Airline pilot	3143	5.55

Notes: Scientist consists of biologist, chemist, and physicist with equal prestige scores of 73

judges. These results are consistent with a central criticism that prestige scores are not a measure of subjective cultural evaluations but are rather a reflection of educational

credentials and income (Bukodi, Dex, and Goldthorpe 2011; Featherman and Hauser 1976).

The ranking of occupations based on deflection, also shown in Table 9, is consistent with Harris Poll rankings. Both scales list firefighter as the highest ranked occupation. Unlike traditional prestige scores where the highest status occupations are exclusively professional occupations, the highest ranked occupations according to the deflection scale are a similar set of society-servicing occupations indicated in opinion polls such as doctors, nurses, and teachers. Also, the very high deflection score for firefighters reflects the particularly high cultural esteem seen in the post-911 era. In addition, the inclusion of cooks provides a unique insight because they are not typically discussed in analyses of prestige and are not included in the opinion polls. Their EPA profile (2.22, 1.68, 1.59) suggests that cooks are viewed as very good, moderately powerful, and active, and have a similar profile as teachers (2.20, 2.07, 0.48). These data can be interpreted to mean that cooks are seen as providers of cultural goods or an active form of teacher. The current popularity of the Food Network and television cooking shows provides an indicator of the cultural esteem held for cooks and the act of cooking.

Figure 8 shows the linear regression of Harris Poll scores on prestige scores and deflection for the twenty-three polled occupations. The results show that while prestige

scores do not significantly predict the prestige rankings based on poll data, deflection scores significantly predict Harris Poll scores with a p-value of .000 and an r^2 of .56.

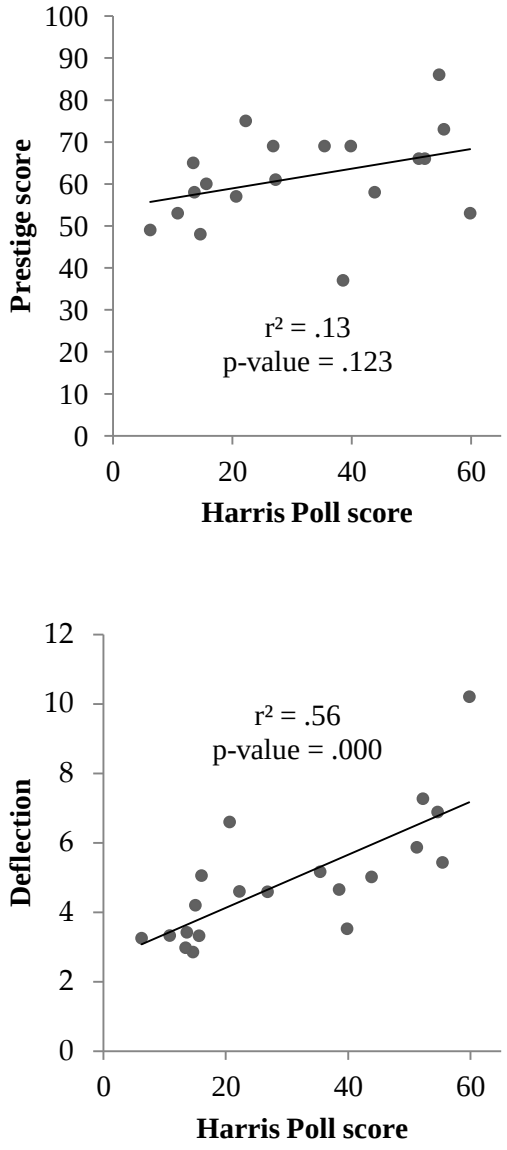


Figure 8: Harris Poll Score versus Prestige Score and Deflection

Because the correlations shown in Figure 8 contains only twenty-three occupations, the relationship between symbolic structure of prestige score and deflection for all unique occupations found in the GSS data set was explored. Model 1 in Table 10 shows the linear regression predicting prestige scores from EPA ratings using individual level data found in the GSS. These results indicate that although all three EPA dimensions are significantly related to prestige scores, they are primarily a function of potency that captures perceptions of power and competence rather than evaluation. These results mirror the findings of MacKinnon and Langford (1994), who also find evaluation to be the least significant factor in traditional prestige scores. The finding that prestige scores are based on cultural perceptions of power rather than goodness and worth supports criticisms that prestige scores provide little explanatory power because they fail to effectively measure cultural evaluations (Bukodi, Dex, and Goldthorpe 2011).

Table 10: Linear Regression Predicting Prestige Scores and Deflection

	Model 1	Model 2
	Prestige Score	Deflection
	Beta (t)	Beta (t)
valuation	.11 (27.9)	.75 (369. *
tency	.73 (160 *	.26 *
tivity	-.30 *	.19 *
	.59	.87
	188	188

p < 0.05; **p < 0.01; *** p < 0.001

Model 2 in Table 10 shows that unlike prestige scores, deflection is primarily determined by evaluation with potency and activity having smaller effects, with standardized regression coefficients of .75, .26, and .19 respectively. This suggests that deflection is based on similar cultural beliefs regarding goodness and worth, as theoretically predicted and reflected in Harris Poll data. These results, combined with the comparison shown in Table 9 and the linear regression shown in Figure 8, support the claim that deflection is a valid indicator of the occupational status order as indicated by what poll respondents state are the most prestigious occupations.

Criterion validity is tested using individual-level outcomes found in the GSS. Table 5 shows the results for the logistic regression examining workplace attachment, based on whether respondents indicated that they would continue working if they became rich. If status provides a cultural value in addition to monetary returns, then workers in high-status occupations should be more likely to indicate that they would keep working if they had the option not to. The results in Table 11 support this assertion since the odds-ratio of 1.07 for deflection indicates that they would continue working net of

Table 11: Logistic Regression Predicting Workplace Attachment

	Odds Ratio (SE)	
Deflection	1.07 (.020)	*
Age	.98 (.002)	**
Female	.73 (.049)	**
Education	1.05 (.009)	**
Income	.88 (.026)	**
Black	.93 (.070)	
Other	1.30 (.090)	*
N	8,891	
Log likelihood	-5,549.8	

* p < 0.05; **p < 0.01; *** p < 0.001

controls. Although the effect of deflection is less than half of the effect of income with an odds-ratio of .88, it is greater the effect of education with an odds-ratio of 1.05. These results support the conclusion that occupational status provides subjective value that influences nonmonetary attachment to work.

One of the most important subjective workplace outcomes is job satisfaction. Model 1 of Table 12 examines the determinants of job satisfaction. The results show that deflection has the strongest effect on ratings of job satisfaction with an odds-ratio of 1.18, followed closely by income with an odds-ratio of 1.16. This suggests that being shown deference as a result of one's work is as important a determinant of workplace satisfaction as how much money people make. Interestingly, education was not significant. Further analyses, available upon request, find that when deflection is removed from the model, education is highly significant. This suggests that the nonmonetary component of education that leads to greater satisfaction is due to being the recipient of deferential behavior. This is consistent with Shils's (1982) theoretical assertion that status stratifies outcomes through interactional deference entitlements.

Since work is a significant part of an individual's life, if deference leads to greater job satisfaction then this should translate to greater general happiness as well. Model 2 of Table 12 examines this assertion and finds that greater deflection is associated with higher ratings of happiness. The results parallel the effects found when respondents

were asked if they would stop working if they were rich. The strongest predictor of general happiness was income with an odds-ratio of 1.16, followed by smaller but equal odds-ratios of 1.05 for deflection and education.

Table 12: Ordinal Regression Predicting Job Satisfaction, General Happiness, Meaningful Job, and Respected at Work

	Model 1		Model 2		Model 3		Model 4	
	Job Satisfaction		Happiness		Job Meaning		Respect	
	Odd ratio (SE)		Odd ratio (SE)		Odd ratio (SE)		Odd ratio (SE)	
Deflection	1.18 (.014)	**	1.05 (.014)	**	1.15 (.033)	**	1.14 (.028)	**
Age	1.02 (.001)	**	1.00 (.001)	*	1.02 (.003)	**	1.02 (.003)	**
Female	1.05 (.034)		1.09 (.034)		1.44 (.076)	**	1.00 (.069)	
Education	1.01 (.006)		1.05 (.006)	**	1.23 (.015)	**	1.03 (.013)	
Income	1.16 (.017)	**	1.16 (.017)	**	0.92 (.038)		1.05 (.033)	
Black	.64 (.048)	**	.61 (.051)	**	.34 (.112)	**	.96 (.098)	
Other	.81 (.059)	**	.75 (.061)	**	.56 (.133)	**	1.01 (.113)	
N	14,507		14,994		2,774		3,619	
Log likelihood	-15,096.2		-13,375.3		-3,610.4		-3,349.6	

* p < 0.05, **p < 0.01 ***p < 0.001

Model 3 in Table 12 examines the factors predicting the relative importance of meaning and a feeling of accomplishment in people's work. Results indicate that deflection is associated with placing greater importance on meaning at work by a factor of 1.15. In contrast, income is associated with decreasing importance in meaning. This is consistent with analyses that find high-status occupations are being rewarded by prestige in addition to pay (Hauser and Warren 1997).

Lastly, because respect is also related to status, Model 4 in Table 12 examines the factors that influence the degree to which respondents feel they are respected at work. Consistent with expectations, the results show deflection to be the most influential predictor by a factor of 1.15. Age and education are the only other significant predictors with much smaller odds-ratios of 1.02 and 1.03 respectively, while income was not significant. One possible reason for the lack of significance of income is that workplace interactions tend to be homophilous (McPherson, Smith-Lovin, and Cook 2001); workers may thus feel they receive similar levels of respect when compared to coworkers with similar levels of income and education. Further research on this issue is warranted.

4.5 Conclusion and Discussion

Prestige scores (Goldthorpe and Hope 1972; Treiman 1977) were previously the predominant method of operationalizing occupational cultural meanings in the 1960s, but widespread criticism that they reflect objective features, especially education, rather

than cultural beliefs has led to their declining use within contemporary stratification research. Without a widely accepted replacement, study of the symbolic aspects of the occupational structure is limited. To address this, in this work a new, quantitative deflection scale of occupational status was developed and tested to invigorate interest in study of occupational status.

Based on the theoretical foundation that status is a form of symbolic power embedded in cultural beliefs that lead to structured relationships of deference (Goldthorpe and Hope 1972; Weber [1958]), affect control theory was used (Heise 2007; 2010) to construct a deflection scale based on the mathematical likelihood that one occupational identity would defer to another based on cultural symbolic meanings measured using EPA ratings. Affect control theory's (ACT) mathematical formulation enables the calculation of deflection, the degree of incongruence produced by events within social interactions. By computing the mean deflection created when an occupational actor defers to another for all possible combinations of 125 occupations found in a new collected dictionary of affective meaning, a quantitative status scale is provided that is consistent with the underlying theoretical foundations of status.

The construct and criterion validity of the deflection scale was then tested. Because status is based on cultural beliefs, construct validity was explored by comparing occupational deflection and traditional prestige scores to occupational rankings found in

public opinion polls conducted by Harris Interactive (Corso 2009). The highest status occupations, as indicated by both opinion polls (Table 8) and deflection (Table 9), are those that provide a "service to society" such as firefighters, doctors, and teachers, as posited by theories of occupational status (Goldthorpe and Hope 1972; Hope 1982). These data also indicate that prestige is not determined primarily by pay or education. In contrast, the most prestigious occupations according to traditional prestige scores (also in Table 9) were all highly educated professional occupations such as professors, doctors, lawyers, and judges. Furthermore, when matching deflection and prestige scores to the twenty-three occupational titles surveyed in opinion polls, only deflection scores were found to significantly predict the ranking of occupational prestige reflected in poll data, as shown in Figure 8. Lastly, a regression of deflection and prestige scores on EPA dimensions, as shown in Table 10, found that while deflection is primarily a function of evaluation, measuring cultural estimations of goodness, prestige scores are primarily determined by the potency dimension that measures power and competence. These results, combined with the previous regression model, support the criticism that traditional prestige scores reflect objective features, especially education, rather than a "positive or negative, social estimation of honor" Weber ([1958]).

I next turn to my evaluation of criterion validity, the ability of a measure to predict theoretically relevant outcomes. If occupational status provides cultural rather

than monetary value, then deflection should be linked to important subjective workplace outcomes involving satisfaction, respect, and meaning. Using a series of regression models, I test the ability of deflection scores to significantly predict the following five important workplace outcomes: 1) attachment, 2) job satisfaction, 3) happiness, 4) respect, and 5) the relative importance of meaning and a sense of accomplishment at work. Regression results, shown in Tables 11 and 12, indicate that deflection scores were significantly predictive of all five outcomes net of sociodemographic controls, and was the strongest predictor of job satisfaction and respect even compared to education and income.

The deflection scale developed in this study is an important innovation for several reasons. First, because the construction of the deflection scale is derived from cultural, symbolic meanings quantified in EPA ratings and ACT's mathematical models, it is clear that deflection is a function of cultural beliefs and relevant social processes. In contrast, it is not clear what provides the underlying basis for the card-sorting procedure used in deriving traditional prestige scores. Only through further analysis is it apparent that it is primarily a function of education credentialing.

Second, prior attempts to develop new subjective scales typically involve posthoc groupings based on occupational outcomes such as similarities in job satisfaction (Rose 2003) or a composite of multiple outcomes (Jencks, Perman, and Rainwater 1988).

Because this approach is not grounded in sociological theory, it is neither clear which factors are driving differential outcomes nor how changes to the occupational structure might affect these groupings. In contrast, the deflection score developed in this study uses a generative approach that predicts the degree of occupational status based solely on quantitative measurements of cultural meanings prior to any knowledge of outcomes.

Lastly, although I use the behavior "defer to" because of its theoretical centrality in the construction and diffusion of status value, the procedure developed in this study provides a flexible framework that can be applied to other actions such as "honor," "respect," or "serve." Exploring how other actions might affect deflection may inform which other actions may also be involved in status construction. Also, by applying this procedure to ratings from previous affective dictionaries, it may inform how the relationship between status, occupations, and outcomes may have changed over time.

In addition to exploring other behaviors and time frames, a number of avenues for future research are evident. First, although I include a baseline set of sociodemographic controls, it would be warranted to examine whether the effect of occupational status varies by other occupational characteristics including industry, or whether deference matters more for highly routinized work versus jobs with more flexibility. Also, significant racial/ethnic differences were evident in workplace

outcomes. It would be fruitful to explore how the effect of status varies by racial or ethnic group.

Although care was taken to construct a representative list of occupations that covered a large majority of occupations listed in the GSS, the list of occupational EPA ratings is still relatively small compared to the list of occupations used to construct prestige scores. Expanding the list of occupations and occupation-related behaviors would provide greater granularity regarding the relationship between actors and behaviors.

5. Conclusion

The broad goal of this dissertation was to explore the relationship between symbolic cultural meanings and occupational stratification through the lens of affect control theory and EPA profiles. In this conclusion, I describe the empirical and theoretical contributions of this dissertation. I also discuss some remaining technical and substantive issues and avenues for future research.

5.1 The Occupational Gender Wage Gap

This study makes several empirical and theoretical contributions to the debate regarding the occupational gender wage gap. Beginning with the empirical contributions, it demonstrated that, similar to objective occupational characteristics, EPA ratings could be used to fully account for the gender wage gap. This is important for two reasons. While a number of measures have been offered to operationalize gendered cultural meanings, none have been widely accepted. By demonstrating the effectiveness of EPA ratings to operationalize cultural meanings, this study offers a robust, well-supported measure that may prove useful in future gender research. In addition, it demonstrates that adjudication of competing theories requires more than simply accounting for group differences but must also test for competing hypotheses. By including cultural meanings, this study provides more methodologically sound support for the human capital perspective by demonstrating that feminine traits are not being culturally devalued and

that income is primarily determined by education, training, skills, and to some extent perceptions of power and competence external to these measures.

Theoretically, the multidimensional model developed in this study is a departure from the unidimensional approach currently used. Instead of arguing that gendered meanings do or do not directly affect wages, this study bridges both perspectives and unifies a seemingly irreconcilable set of findings by arguing that gendered meanings indirectly affect wages by influencing the distribution of women into high-evaluation but low-potency occupations that require lower human capital. Patterns found by focusing on the single dimension of evaluation mirror the devaluation thesis, but inclusion of the second dimension of potency alters the narrative. The conflation of evaluation and potency provides support to both positions because it demonstrates that cultural meanings do play an important, albeit indirect, role in generating the gender wage gap but at the same time demonstrates that feminine traits encompassing goodness, caring, and warmth are not being culturally devalued.

5.1.1 Remaining Issues

While a large majority of occupation codes were matched to occupational identities, the list of identities is still relatively small compared to other approaches such as occupational prestige scores. The list of occupational identities should be expanded with particular attention paid to certain occupational categories with few occupations. For example, while there were a large number of healthcare practitioners like doctors or

nurses, only three healthcare support occupations (medical, dental, and nursing assistants) were included. Future surveys should also include specific occupational titles found in the SOC coding scheme. Many of the identities, such as elementary school teachers or civil engineers, were direct matches to occupational titles, while some identities provided a less-close fit and were matched based on similar job characteristics. For example, the occupation of *medical assistant* was matched to the identity *medic* because they require similar levels of education and training, perform similar job tasks, and have relatively equal wages. However, because medics deal with emergencies, it is likely that they would be rated higher in evaluation than a medical assistant. Because the results of the analyses are based on a large number of occupations, it is unlikely that this would alter the substantive finding of this study, but it would be prudent to address this as much as possible in future research.

5.1.2 Future Research

The results of this study suggest several avenues for future research. First, a prominent and related issue in gender stratification research is explaining the low concentration of women in STEM occupations (science, technology, engineering, and math). One possibility is that this phenomenon is an instance of the process described in this study in which women avoid STEM occupations because the cultural meanings associated with them are incongruent with their feminine identities. For example, the rating for *engineer* exhibits high potency but low evaluation. A future study could

explore the EPA structure of STEM occupations to determine the relationship between meanings associated with those occupations and widely held cultural beliefs that define feminine meanings.

Another line of research could use network models to examine gender differences in patterns of behavior, conservation, or organization memberships. If culture is enacted at the local level then differences in peer relationships should be apparent. Identifying network differences between groups may inform how cultural beliefs are formed and disseminated.

5.2 Evaluation and Status

An important feature of this exploratory study was the description of the relationship between occupational status, measured by the evaluation dimension of EPA ratings, and a range of stratified outcomes. The central finding was that this measure of status exhibits markedly different patterns of associations than previous measures of status. Instead of being associated with lifestyle and cultural consumption, I find little to no association between status and lifestyle measures. Instead, status was significantly predictive of work- and income-related measures, institutional participation, and political and social attitudes.

I argue that is because previous measures have focused on the potency dimension that reflects class conditions rather than evaluation measuring goodness and worthiness. By focusing on the dimension of greatest explanatory power, these measures have

inadvertently undermined their utility because their basis, objective conditions, can already be measured directly. Although evaluation has less explanatory power regarding income than potency, its utility rests on reflecting a base of social power independent of material conditions.

5.2.1 Remaining Issues

Although informed by the approach developed by Weeden and Grusky (2005), this study used a different analytic approach. Because Weeden and Grusky evaluated the explanatory power of big versus small class schemas, they examined differences in total occupation-by-outcome associations without controls. This was sufficient because their central focus was on how the process of aggregation itself affects associations. However, because subjective measures partially reflect economic conceptions, it was necessary to use regression models to examine the effect of status net of socioeconomic characteristics. While catering regression models to the dependent variable allowed for comparisons of independent variables within the model, it made direct comparisons between models with different dependent variables problematic. While the current approach can be used to explore large differences in the pattern of outcomes, a unified model is needed to provide a more granular comparison.

5.2.2 Future Research

Future research could focus on outcomes that were not included in this study and explore findings such as the lack of significance between status and cultural consumption

patterns in more depth. Expanding the list of outcomes for each category would provide more information regarding the relationship between status and particular outcome categories. Because the measure of newspaper and television consumption found in the GSS did not specify the types of newspapers or television shows consumed, future research could further explore this issue by using a dataset that contains this information.

5.3 Occupational Status and Deflection

The focus of this study was to develop and test a new measure of occupational status. Developing a sound measure of occupational status may serve to reinvigorate study of subjective measures in stratification research. The results show that deflection is more predictive of status rankings from Harris Poll data than occupational prestige scores. Criterion validity was tested using five theoretically relevant workplace outcomes: subjective attachment, job satisfaction, general happiness, the importance of meaningful work, and respect. The results found deflection scores to be significantly associated with all five measures net of controls.

5.3.1 Remaining Issues

Several important choices regarding gender were made in the calculation of deflection scores. First, male equations were used to compute the deflection scores. Since males and females within a culture process sentiments similarly, this decision probably did not affect the overall ranking of occupations but it is possible that specific scores may be affected. More importantly, gender-neutral ratings were used for concepts

by combining ratings from male and female survey participants. While the choice of using male equations likely had little effect, separate scales based on male and female ratings may produce more dissimilar results.

Another issue with the impression formation equations is that they may be outdated. In conjunction with the project to collect ratings for the new affective dictionary, a new impression formation study was also conducted. Given the dramatic changes in the occupation structure such as increased female labor participation and the shift to a postindustrial economy, it is possible that the dimensions of meaning are processed differently. It is unclear whether increased routinization or institutionalization might increase or decrease the relative effect of evaluation versus potency or activity. Consequently, it would be prudent to examine differences in the equations once the results of the new equation study have been finalized.

5.3.2 Future Research

The use of the behavior *defers to* was selected because it was the most directly referenced in the literature. However, the methodology developed in this study could be used to examine other behaviors and develop a typology of behaviors. This study used the negative action *defers to*, which essentially questions the likelihood that a good actor would perform this negative act with scores indicating that they would likely not perform it. Analyses not shown using positive behaviors such as *respect* or *serve* produce largely similar results but with lower deflection, indicating that they would be likely to perform

positive actions. By exploring what actions do or do not contribute to perceptions of status, it may be possible to develop new theories on how status is formed and disseminated.

Appendix A. 2010 SOC Occupation and Identity Crosswalk

2010 SOC Occupational	Identity
11-0000 Management Occupations	
11-1011 Chief Executives	CEO
11-1020 General and Operations Managers	Manager
11-2011 Advertising and Promotions Managers	Advertising executive
11-3031 Financial Managers, Branch or Department	Bank manager
11-3051 Industrial Production Managers	Foreman
11-9013 Farmers, Ranchers, and Other Agricultural Managers	Farmer
11-9021 Construction Managers	Construction contractor
11-9032 Education Administrators, Elementary and Secondary School	Education administrator
11-9051 Food Service Managers	Restaurant operator
13-0000 Business and Financial Operations Occupations	
13-1022 Wholesale and Retail Buyers, Except Farm Products	Wholesaler
13-1031 Insurance Adjusters, Examiners, and Investigators	Insurance claims invest
13-1041 Coroners	Coroner
13-1111 Management Analysts	Consultant
13-1199 Online Merchants	Online merchant
13-2011 Accountants	Accountant
13-2082 Tax Preparers	Tax preparer
15-0000 Computer and Mathematical Occupations	
15-1122 Information Security Analysts	Computer security specialist
15-1131 Computer Programmers	Computer programmer
15-1134 Web Developers	Web developer
15-1151 Computer User Support Specialists	Computer support specialist
15-1199 Computer Systems Engineers/Architects	Systems engineer
15-2041 Statisticians	Statistician
17-0000 Architecture and Engineering Occupations	
17-1011 Architects, Except Landscape and Naval	Architect
17-1012 Landscape Architects	Landscape architect
17-2041 Chemical Engineers	Chemical engineer

Continued on next page.

Appendix A continued.

2010 SOC Occupational	Identity
17-2051 Civil Engineers	Civil engineer
17-2071 Electrical Engineers	Electrical engineer
17-2141 Mechanical Engineers	Mechanical engineer
17-2199 Engineers, All Other	Engineer
19-0000 Life, Physical, and Social Science Occupations	
19-1020 Biologists	Biologist
19-2012 Physicists	Physicist
19-2031 Chemists	Chemist
19-2042 Geoscientists, Except Hydrologists and Geographers	Geologist
19-3011 Economists	Economist
19-3030 Psychologists	Psychologist
19-3094 Political Scientists	Political scientist
21-0000 Community and Social Service Occupations	
21-1021 Child, Family, and School Social Workers	Social worker
21-1092 Probation Officers and Correctional Treatment Specialists	Probation officer
21-2011 Clergy	Clergy
21-2021 Directors, Religious Activities and Education	Church deacon
23-0000 Legal Occupations	
23-1011 Lawyers	Lawyer
23-1022 Arbitrators, Mediators, and Conciliators	Negotiator
23-1023 Judges, Magistrate Judges, and Magistrates	Judge
23-2091 Court Reporters	Stenographer
25-0000 Education, Training, and Library Occupations	
25-1000 Postsecondary teachers	Professor
25-2021 Elementary School Teachers, Except Special Education	Elementary school teacher
25-2022 Middle School Teachers	Teacher
25-2031 Secondary School Teachers	Teacher
25-4021 Librarians	Librarian

Continued on next page.

Appendix A continued.

2010 SOC Occupational	Identity
27-0000 Arts, Design, Entertainment, Sports, and Media Occupations	
27-1012 Craft Artists	Craftsman
27-1013 Fine Artists, Including Painters, Sculptors, and Illustrators	Artist
27-2011 Actors	Actor
27-2021 Athletes and Sports Competitors	Athlete
27-2022 Coaches and Scouts	Coach
27-2023 Umpires, Referees, and Other Sports Officials	Referee
27-2032 Choreographers	Choreographer
27-2041 Music Directors	Music director
27-2042 Musicians and Singers	Musician
27-3011 Radio and Television Announcers	Radio and television an
27-3021 Broadcast News Analysts	Broadcast news analyst
27-3022 Reporters and Correspondents	Reporter
27-3031 Public Relations Specialists	Public relations specialist
27-3041 Editors	Editor
27-3043 Copy Writers	Advertising copy writer
27-3043 Writers and authors	Author
27-3091 Interpreters and Translators	Interpreter
27-4021 Photographers	Photographer
29-0000 Healthcare Practitioners and Technical Occupations	
29-1011 Chiroprachors	Chiropractor
29-1021 Dentists	Dentist
29-1031 Dietitians and nutritionists	Dietitian
29-1051 Pharmacists	Pharmacist
29-1061 Anesthesiologists	Anesthetist
29-1065 Pediatricians, General	Pediatrician
29-1066 Psychiatrists	Psychiatrist
29-1067 Surgeons	Surgeon
29-1069 Physicians and Surgeons, All Other	Physician
29-1069 Ophthalmologists	Ophthalmologist

Continued on next page.

Appendix A continued.

2010 SOC Occupational	Identity
29-1127 Speech-Language Pathologists	Speech language pathologist
29-1131 Veterinarians	Veterinarian
29-1141 Registered Nurses	Nurse
29-2021 Dental hygienists	Dental hygienist
29-2031 Flight Attendants	Flight attendant
31-0000 Healthcare Support Occupations	
31-1014 Nursing Assistants	Nursing assistant
31-9091 Dental Assistants	Dental assistant
31-9092 Medical Assistants	Medic
33-0000 Protective Service Occupations	
33-1011 First-Line Supervisors of Correctional Officers	Warden
33-2011 Firefighters	Firefighter
33-2021 Fire Investigators	Fire investigator
33-3011 Baliffs, correctional officers, and jailers	Bailiff
33-3021 Detectives and Criminal Investigators	Detective
33-3021 Criminal Investigators and Special Agents	Investigator
33-3021 Immigration and Customs Inspectors	Customs officer
33-3021 Intelligence Analysts	Interrogator
33-3051 Police Patrol Officers	Police officer
33-3051 Sheriffs and Deputy Sheriffs	Sheriff
33-9032 Security Guards	Security guard
35-0000 Food Preparation and Serving Related Occupations	
35-1011 Chefs and Head Cooks	Chef
35-2014 Cooks, Restaurant	Cook
35-3011 Bartenders	Bartender
35-3021 Food Preparation and Serving Workers, Including Fast Food	Fast food server
35-3031 Waiters and Waitresses	Waitress
35-3041 Food Servers, Nonrestaurant	Server
35-9011 Dining Room and Cafeteria Attendants and Bartender Helpers	Busboy
35-9021 Dishwashers	Dishwasher
35-9031 Hosts and Hostesses, Restaurant, Lounge, and Coffee	Hostess

Continued on next page.

Appendix A continued.

2010 SOC Occupational	Identity
37-0000 Building and Grounds Cleaning and Maintenance Occupations	
37-1011 First-Line Supervisors of Housekeeping and Janitorial Workers	Custodian
37-2011 Janitors and Cleaners, Except Maids and Housekeeping Cleaners	Janitor
37-2012 Maids and Housekeeping Cleaners	Maid
37-3011 Landscaping and Groundskeeping Workers	Landscaper
39-0000 Personal Care and Service Occupations	
39-3031 Ushers, Lobby Attendants, and Ticket Takers	Usher
39-4031 Morticians, Undertakers, and Funeral Directors	Funeral director
39-5011 Barbers	Barber
39-5012 Hairdressers, Hairstylists, and Cosmetologists	Hairdresser
39-6011 Baggage porters, bellhops, and concierges	Bellhop
39-9010 Child care workers	Baby sitter
41-0000 Sales and Related Occupations	
41-1011 First-Line Supervisors of Retail Sales Workers	Retailer
41-2011 Cashiers	Cashier
41-2021 Counter and Rental Clerks	Shop clerk
41-2031 Retail Salespersons	Salesperson
41-3021 Insurance Sales Agents	Insurance agent
41-3031 Sales Agents, Securities and Commodities	Stockbroker
41-3041 Travel Agents	Travel agent
41-3099 Sales Representatives, Services, All Other	Auctioneer
41-9022 Real Estate Sales Agents	Real estate agent
41-9041 Telemarketers	Telemarketer
43-0000 Office and Administrative Support Occupations	
43-1011 First-Line Supervisors of Office and Administrative Support	Manager of branch store
43-2011 Switchboard Operators, Including Answering Service	Switchboard operator
43-2021 Telephone Operators	Telephone operator
43-3011 Bill and Account Collectors	Bill collector

Continued on next page.

Appendix A continued.

2010 SOC Occupational	Identity
43-3031 Bookkeeping, accounting, and auditing clerks	Bookkeeper
43-3071 Tellers	Bank teller
43-4051 Customer Service Representatives	Customer systems analyst
43-4071 File Clerks	File clerk
43-4111 Interviewers, Except Eligibility and Loan	Interviewer
43-4121 Library assistants, clerical	Library assistant
43-4171 Receptionists and Information Clerks	Receptionist
43-4181 Reservation and Transportation Ticket Agents and Travel Clerks	Transportation ticket age
43-5052 Postal service mail carriers	Mail carrier
43-5081 Stock Clerks, Sales Floor	Salesclerk
43-6014 Secretaries and Administrative Assistants	Secretary
43-9022 Word processors and typists	Typist
43-9061 Office Clerks, General	Clerk
45-0000 Farming, Fishing, and Forestry Occupations	
45-2092 Farmworkers and Laborers, Crop	Farm laborer
45-2093 Farmworkers, Farm, Ranch, and Aquacultural Animal	Dairy farmer
45-3011 Fishers and Related Fishing Workers	Fisherman
45-4011 Forest and Conservation Workers	Forest ranger
45-4021 Fallers	Logger
47-0000 Construction and Extraction Occupations	
47-1011 First-Line Supervisors of Construction and Extraction Workers	Construction foreman
47-2021 Brickmasons and Blockmasons	Bricklayer
47-2031 Carpenters	Carpenter
47-2061 Construction Laborers	Construction laborer
47-2073 Construction Equipment Operators	Bulldozer operator
47-2111 Electricians	Electrician
47-2152 Plumbers	Plumber
47-2181 Roofers	Roofer
47-2211 Sheet Metal Workers	Sheet metal worker
47-2221 Structural Iron and Steel Workers	Steel worker
47-5041 Continuous Mining Machine Operators	Miner
47-5042 Mine Cutting and Channeling Machine Operators	Coal miner

Continued on next page.

Appendix A continued.

2010 SOC Occupational	Identity
49-0000 Installation, Maintenance, and Repair Occupations	
49-2094 Electrical and Electronics Repairers, Commercial and Industrial Equipment	TV repairman
49-3023 Automotive Service Technicians and Mechanics	Auto mechanic
49-9043 Maintenance Workers, Machinery	Machine repairer
49-9051 Electrical Power-Line Installers and Repairers	Electrical linesman
49-9052 Telecommunications Line Installers and Repairers	Telephone installer
49-9071 Maintenance and Repair Workers, General	Handyman
49-9094 Locksmiths and Safe Repairers	Locksmith
51-0000 Production Occupations	
51-1011 Supervisors of Production and Operating Workers	Supervisor
51-2031 Engine and Other Machine Assemblers	Automobile assembler
51-2092 Team Assemblers	Assembly line worker
51-3011 Bakers	Baker
51-3021 Butchers and other meat, poultry, and fish processing workers	Butcher
51-4022 Forging Machine Setters, Operators, and Tenders	Blacksmith
51-4081 Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	Machine operator in a factory
51-4111 Tool and Die Makers	Tool and die maker
51-4121 Welders, Cutters, and Welder Fitters	Welder
51-6031 Sewing Machine Operators	Sewing machine operator
51-6041 Shoe and Leather Workers and Repairers	Shoe repairman
51-6052 Tailors, Dressmakers, and Custom Sewers	Tailor
51-6063 Textile and Weaving Machine Setters, Operators, and Tenders	Textile worker
51-7011 Cabinetmakers and Bench Carpenters	Cabinet maker
51-9071 Jewelers and Precious Stone and Metal Workers	Jeweler
51-9123 Painting, Coating, and Decorating Workers	Decorator
53-0000 Transportation and Material Moving Occupations	
53-2011 Airline Pilots, Copilots, and Flight Engineers	Airline pilot
53-3021 Bus Drivers, Transit and Intercity	Bus driver

Continued on next page.

Appendix A continued.

2010 SOC Occupational	Identity
53-3031 Driver/Sales Workers	Truck driver
53-3041 Taxi drivers and chauffeurs	Taxi driver
53-4013 Rail Yard Engineers, Dinkey Operators, and Hostlers	Railroad engineer
53-4031 Railroad conductors and yardmasters	Railroad conductor
53-5021 Ship and Boat Captains	Ship captain
53-5031 Ship Engineers	Ship engineer
53-6021 Parking Lot Attendants	Parking attendant
53-6031 Automotive and Watercraft Service Attendants	Gas station attendant
53-7021 Crane and Tower Operators	Crane operator
53-7062 Laborers and Freight, Stock, and Material Movers, Hand	Laborer
53-7081 Refuse and recyclable material collectors	Garbage collector

Appendix B. ISCO-88 and Identity Crosswalk

ISCO-88	Description	Identity
1110	Legislators	Legislator
1120	Senior government officials	Legislator
1229	Production and operations department managers	Manager
1231	Finance and administration department managers	Bank manager
1232	Personnel and industrial relations department managers	Manager
1233	Sales and marketing department managers	Manager
1240	Misc. office supervisors	Supervisor
1311	Agriculture, hunting, forestry, fishing manager	Forest ranger
1314	General managers in wholesale and retail trade	Manager of branch store
2110	Physicists, chemists, and related professionals	Physicist
2111	Physicists and astronomers	Physicist
2113	Chemists	Chemist
2114	Geologists and geophysicists	Geologist
2122	Statisticians	Statistician
2131	Computer programmers	Computer programmer
2132	Computing professionals	Computer support specialist
2141	Architects	Architect
2142	Civil engineers	Civil engineer
2143	Electrical engineers	Electrical engineer
2145	Mechanical engineers	Mechanical engineer
2146	Chemical engineers	Chemist
2149	Architects, engineers, and related	Architect

Continued on next page.

Appendix B continued.

ISCO-88	Description	Identity
2211	Biologists, botanists, zoologists	Biologist
2221	Medical doctors	Doctor
2222	Dentists	Dentist
2223	Veterinarians	Veterinarian
2224	Pharmacists	Pharmacist
2230	Nursing and midwifery professionals	Nurse
2310	College and university teaching professionals	Professor
2321	Secondary school teachers	Teacher
2331	Primary education teaching professionals	Elementary school teacher
2359	Other teaching professionals	Teacher
2411	Accountants	Accountant
2412	Personnel and careers professionals	Professional
2421	Lawyers	Lawyer
2422	Judges	Judge
2431	Archivists and curators	Librarian
2432	Librarians and related information professionals	Librarian
2441	Economists	Economist
2445	Psychologists	Psychologist
2446	Social work professionals	Social worker
2451	Authors, journalists, and other writers	Journalist
2452	Sculptors, painters, and related artists	Artist
2455	Film, stage, and related actors	Actor
2460	Religious professionals	Clergy
3111	Chemical and physical science technicians	Technician
3113	Electrical engineering technicians	Technician
3115	Mechanical engineering technicians	Technician
3119	Physical and engineering science technicians	Technician
3122	Computer equipment operators	Computer support specialist

Continued on next page.

Appendix B continued.

ISCO-88	Description	Identity
3132	Telecommunications equipment operators	Switchboard operator
3143	Aircraft pilots	Airline pilot
3151	Building and fire inspectors	Fire investigator
3211	Life science technicians	Technician
3221	Medical assistants	Nursing assistant
3223	Dieticians and nutritionists	Nutritionist
3225	Dental assistants	Dental assistant
3231	Nursing associate professionals	Nurse
3410	Finance and sales associate professionals	Bank teller
3411	Securities and finance dealers and brokers	Stockbroker
3412	Insurance representatives	Insurance agent
3413	Estate agents	Real estate agent
3415	Technical and commercial sales representatives	Salesperson
3416	Buyers	Wholesaler
3417	Appraisers and auctioneers	Auctioneer
3429	Brokers	Stockbroker
3444	Government licensing officials	Civil servant
3460	Social work associate professionals	Social worker
3471	Decorators and commercial designers	Decorator
3472	Radio, television, and other announcers	Radio and TV announcer
3473	Street, nightclub, and related musicians	Street musician
3475	Athletes and related associate professionals	Athlete
3480	Religious associate professionals	Clergy
4100	Clerks	Clerk
4111	Stenographers and typists	Typist
4113	Data entry operators	Clerical worker
4115	Secretaries	Secretary
4121	Accounting and bookkeeping clerks	Accounting clerk
4131	Store clerks	Shop clerk
4132	Production clerks	Clerk

Continued on next page.

Appendix B continued.

ISCO-88	Description	Identity
4133	Transport clerks	Clerk
4141	Library and filing clerks	Library assistant
4142	Mail carriers and sorting clerks	Mail carrier
4143	Coding, proofreading	Advertising copywriter
4190	Other office clerks	File clerk
4211	Cashiers and ticket clerks	Cashier
4212	Tellers and other counter clerks	Bank teller
4215	Debt collectors and related workers	Bill collector
4221	Travel agency and related clerks	Travel agent
4222	Receptionists	Receptionist
4223	Telephone switchboard operators	Telephone operator
5110	Protective services workers	Security guard
5112	Transport conductors	Railroad conductor
5120	Housekeeping and restaurant services workers	Chambermaid
5121	Housekeepers and related workers	Housekeeper
5122	Cooks	Cook
5123	Waiters, waitresses, and bartenders	Waitress
5131	Childcare workers	Babysitter
5132	Institution-based personal care workers	Nursing assistant
5141	Hairdressers, barbers, beauticians	Hairdresser
5143	Undertakers	Undertaker
5161	Firefighters	Firefighter
5162	Police officers	Police officer
5169	Protective services workers	Security guard
5220	Shop salespersons and demonstrators	Salesclerk
6113	Gardeners, horticultural, and nursery growers	Landscaper
6132	Farmers	Farmer
6133	Farm supervisors	Farmer

Continued on next page.

Appendix B continued.

ISCO-88	Description	Identity
6141	Forestry workers and loggers	Logger
7110	Extraction trades workers	Coal miner
7111	Miners and quarry workers	Miner
7112	Shotfirers and blasters	Miner
7122	Bricklayers and stonemasons	Bricklayer
7123	Concrete placers, finishers, and related workers	Cement worker
7124	Carpenters	Carpenter
7129	Building frame and related trades workers	Construction laborer
7131	Roofers	Construction laborer
7132	Floor layers and tile setters	Cement worker
7133	Plasterers	Construction laborer
7136	Plumbers	Plumber
7137	Building and related electricians	Electrician
7143	Building structure cleaners	Custodian
7212	Welders	Welder
7213	Sheet-metal workers	Sheet-metal worker
7221	Blacksmiths and forging-press workers	Blacksmith
7222	Toolmakers and related workers	Tool and die maker
7230	Machinery mechanics and fitters	Machine repairer
7231	Motor vehicle mechanics and fitters	Auto mechanic
7233	Agricultural- or industrial-machinery mechanics	Machine repairer
7234	Misc. garage helpers	Laborer
7240	Electrical and electronic equipment mechanics	TV repairman
7241	Electrical mechanics and fitters	Electrical linesman
7242	Electronics fitters	TV repairman
7244	Telegraph and telephone installers	Telephone installer
7245	Electrical line installers	Electrical linesman
7310	Precision workers in metal and related materials	Sheet metal worker

Continued on next page.

Appendix B continued.

ISCO-88	Description	Identity
7311	Precision-instrument makers	Tool and die maker
7313	Jewelry and precious-metal workers	Jeweler
7331	Handicraft workers in wood and related materials	Carpenter
7344	Photographic and related workers	Photographer
7411	Butchers	Butcher
7412	Bakers	Baker
7420	Cabinetmakers and related trades workers	Cabinetmaker
7422	Cabinetmakers	Cabinetmaker
7433	Tailors, dressmakers, and hatters	Tailor
7436	Sewers, embroiderers	Textile worker
7442	Shoemakers	Shoe repairman
7510	Supervisors, crafts and trades	Supervisor
7520	Misc. crafts and trades	Craftsman
8122	Metal melters, casters, and rolling-mill workers	Steelworker
8151	Crushing-, grinding-, mixing-machineryoperators	Factory machine operator
8211	Machine tool operators	Factory machine operator
8223	Metal finishing-, plating and coating machine operators	Sheet metal worker
8229	Chemical-products machine operators	Factory machine operator
8240	Wood-products machine operators	Factory machine operator
8251	Printing-machine operators	Factory machine operator
8262	Weaving- and knitting-machine operators	Textile worker
8263	Sewing machine operators	Textile worker
8264	Bleaching, dyeing machine operators	Textile worker

Continued on next page.

Appendix B continued.

ISCO-88	Description	Identity
8266	Shoemaking and related machine operators	Shoe repairman
8269	Textile products machine operators	Textile worker
8270	Food products machine operators	Factory machine operator
8274	Baked-goods products machine operators	Factory machine operator
8275	Fruit-, vegetable-processing machine operators	Factory machine operator
8290	Other machine operators and assemblers	Factory machine operator
8311	Locomotive-engine drivers	Railroad engineer
8312	Railway brakers, signalers, and shunters	Railroad engineer
8322	Taxi and van drivers	Taxi driver
8323	Bus and tram drivers	Bus driver
8324	Heavy-truck and lorry drivers	Truck driver
8330	Mobile-plant operators	Bulldozer operator
8332	Earth-moving and related plant operators	Bulldozer operator
8333	Crane, hoist and related plant operators	Crane operator
8334	Lifting-truck operators	Bulldozer operator
8400	Fabricating-machine operator	Factory machine operator
9131	Domestic helpers and cleaners	Maid
9132	Cleaners in offices, hotels, and other establishments	Chambermaid
9140	Building caretakers and related cleaners	Janitor
9141	Building caretakers	Landscaper
9151	Luggage porters and deliverers	Bellhop
9152	Doorkeepers, watchpersons, and related workers	Lobby attendant
9161	Garbage collectors	Garbage collector
9211	Farmhands and laborers	Farm laborer

Continued on next page.

Appendix B continued.

ISCO-88	Description	Identity
9300	Laborers in mining, construction, manufacturing	Laborer
9311	Mining and quarrying laborers	Miner
9313	Building construction laborers	Construction laborer
9320	Manufacturing laborers	Laborer
9321	Assembling laborers	Assembly line worker
9322	Hand packers and other manufacturing laborers	Assembly line worker
9333	Freight handlers	Laborer

Appendix C. ISCO-88 and Identity Crosswalk for Deflection Scores

ISCO-88	Description	Identity
1110	Legislators	Legislator
1120	Senior government officials	Governor
1229	Production and operations department managers	Manager
1231	Finance and administration department managers	Bank manager
1232	Personnel and industrial relations department managers	Manager
1233	Sales and marketing department managers	Manager
1240	Misc. office supervisors	Supervisor
1311	Agriculture, hunting, forestry, fishing manager	Forest ranger
1314	General managers in wholesale and retail trade	Manager of branch store
2110	Physicists, chemists, and related professionals	Physicist
2111	Physicists and astronomers	Physicist
2113	Chemists	Chemist
2114	Geologists and geophysicists	Geologist
2122	Statisticians	Statistician
2131	Computer programmers	Computer programmer
2132	Computing professionals	Computer support specialist
2141	Architects, town and traffic planners	Architect
2142	Civil engineers	Civil engineer
2143	Electrical engineers	Electrical engineer
2145	Mechanical engineers	Mechanical engineer
2146	Chemical engineers	Chemist
2149	Architects, engineers, and related professionals	Architect
2211	Biologists, botanists, zoologists	Biologist
2221	Medical doctors	Physician
2222	Dentists	Dentist

Continued on next page.

Appendix C continued.

ISCO-88	Description	Identity
2223	Veterinarians	Veterinarian
2224	Pharmacists	Pharmacist
2230	Nursing and midwifery professionals	Nurse
2310	College, university teaching professionals	Professor
2321	Secondary school teachers	Teacher
2331	Primary education teaching professionals	Elementary school teacher
2359	Other teaching professionals	Teacher
2411	Accountants	Accountant
2421	Lawyers	Lawyer
2422	Judges	Judge
2431	Archivists and curators	Librarian
2432	Librarians and related information professionals	Librarian
2441	Economists	Economist
2445	Psychologists	Psychologist
2446	Social work professionals	Social worker
2451	Authors, journalists, and other writers	Journalist
2452	Sculptors, painters, and related artists	Artist
2455	Film, stage, and related actors	Actor
2460	Religious professionals	Clergy
3111	Chemical and physical science technicians	Technician
3113	Electrical engineering technicians	Technician
3115	Mechanical engineering technicians	Technician
3119	Physical and engineering science technicians	Technician
3122	Computer equipment operators	Computer support specialist
3132	Telecommunications equipment operators	Switchboard operator
3143	Aircraft pilots	Airline pilot
3151	Building and fire inspectors	Fire investigator
3211	Life science technicians	Technician
3221	Medical assistants	Nursing assistant
3223	Dieticians and nutritionists	Nutritionist
3225	Dental assistants	Dental assistant
3231	Nursing associate professionals	Nurse
3410	Finance and sales associate professionals	Bank teller

Continued on next page.

Appendix C continued.

ISCO-88	Description	Identity
3411	Securities and finance dealers and brokers	Stockbroker
3412	Insurance representatives	Insurance agent
3413	Estate agents	Real estate agent
3415	Technical and commercial sales representatives	Salesperson
3416	Buyers	Wholesaler
3417	Appraisers, valuers, and auctioneers	Auctioneer
3429	Brokers	Stockbroker
3444	Government licensing officials	Civil servant
3460	Social work associate professionals	Social worker
3471	Decorators and commercial designers	Decorator
3472	Radio, television, and other announcers	Radio and television announcer
3473	Street, nightclub, and related musicians	Street musician
3475	Athletes and related associate professionals	Athlete
3480	Religious associate professionals	Clergy
4100	Clerks	Clerk
4111	Stenographers and typists	Typist
4113	Data entry operators	Clerical worker
4115	Secretaries	Secretary
4131	Store clerks	Shop clerk
4132	Production clerks	Clerk
4133	Transport clerks	Clerk
4141	Library and filing clerks	Library assistant
4142	Mail carriers and sorting clerks	Mail carrier
4143	Coding, proofreading	Advertising copy writer
4190	Other office clerks	File clerk
4211	Cashiers and ticket clerks	Cashier
4212	Tellers and other counter clerks	Bank teller
4215	Debt collectors and related workers	Bill collector
4221	Travel agency and related clerks	Travel agent
4222	Receptionists and information clerks	Receptionist
4223	Telephone switchboard operators	Telephone operator
5110	Personal and protective services workers	Security guard

Continued on next page.

Appendix C continued.

ISCO-88	Description	Identity
5112	Transport conductors	Railroad conductor
5120	Housekeeping and restaurant services workers	Housekeeper
5121	Housekeepers and related workers	Housekeeper
5122	Cooks	Cook
5123	Waiters, waitresses, and bartenders	Waitress
5131	Child-care workers	Baby sitter
5132	Institution-based personal care workers	Nursing assistant
5141	Hairdressers, barbers, beauticians	Hairdresser
5161	Firefighters	Firefighter
5162	Police officers	Police officer
5169	Protective services workers	Security guard
5220	Shop salespersons and demonstrators	Salesclerk
6113	Gardeners, horticultural and nursery growers	Landscaper
6132	Farmers	Farmer
6133	Farm supervisors	Farmer
6141	Forestry workers and loggers	Logger
7110	Extraction and building trades workers	Coal miner
7111	Miners and quarry workers	Miner
7112	Shotfirers and blasters	Miner
7122	Bricklayers and stonemasons	Bricklayer
7123	Concrete placers, finishers, and related workers	Cement worker
7124	Carpenters	Carpenter
7129	Building frame and related trades workers	Construction laborer
7131	Roofers	Construction laborer
7132	Floor layers and tile setters	Cement worker
7133	Plasterers	Construction laborer
7136	Plumbers and pipe fitters	Plumber
7137	Building and related electricians	Electrician
7143	Building structure cleaners	Custodian
7212	Welders and flamecutters	Welder
7213	Sheet-metal workers	Sheet metal worker

Continued on next page.

Appendix C continued.

ISCO-88	Description	Identity
7221	Blacksmiths and forging-press workers	Blacksmith
7222	Tool makers and related workers	Tool and die maker
7230	Machinery mechanics and fitters	Machine repairer
7231	Motor vehicle mechanics and fitters	Auto mechanic
7233	Agricultural- or industrial-machinery mechanics	Machine repairer
7234	Misc. garage helpers	Laborer
7240	Electrical and electronic equipment mechanics	TV repairman
7241	Electrical mechanics and fitters	Electrical linesman
7242	Electronics fitters	TV repairman
7244	Telegraph and telephone installers	Telephone installer
7245	Electrical line installers	Electrical linesman
7310	Precision workers in metal and related materials	Sheet metal worker
7311	Precision-instrument makers	Tool and die maker
7313	Jewelry and precious-metal workers	Jeweler
7331	Handicraft workers in wood and related materials	Carpenter
7344	Photographic and related workers	Photographer
7411	Butchers and related food preparers	Butcher
7412	Bakers and confectionery makers	Baker
7420	Cabinetmakers and related trades workers	Cabinet maker
7422	Cabinetmakers	Cabinet maker
7433	Tailors, dressmakers, and hatters	Tailor
7436	Sewers, embroiderers	Textile worker
7442	Shoemakers	Shoe repairman
7510	Supervisors, crafts, and trades	Supervisor
7520	Misc. crafts and trades	Craftsman
8122	Metal melters, casters, and rolling-mill workers	Steel worker
8151	Crushing-, grinding-, mixing-machinery operators	Factory machine operator
8211	Machine tool operators	Factory machine operator

Continued on next page.

Appendix C continued.

ISCO-88	Description	Identity
8223	Metal finishing-, plating-, and coating machine operators	Sheet metal worker
8229	Chemical-products machine operators	Factory machine operator
8240	Wood-products machine operators	Factory machine operator
8251	Printing-machine operators	Factory machine operator
8262	Weaving- and knitting-machine operators	Textile worker
8263	Sewingmachine operators	Textile worker
8264	Bleaching-, dyeing-machine operators	Textile worker
8266	Shoemaking and related machine operators	Shoe repairman
8269	Textile-products machine operators	Textile worker
8270	Food-products machine operators	Factory machine operator
8274	Baked-goods products machine operators	Factory machine operator
8275	Fruit-, vegetable-processing machine operators	Factory machine operator
8290	Other machine operators and assemblers	Factory machine operator
8311	Locomotive-engine drivers	Railroad engineer
8312	Railway brakers, signalers, and shunters	Railroad engineer
8322	Car, taxi, and van drivers	Taxi driver
8323	Bus and tram drivers	Bus driver
8324	Heavy-truck and lorry drivers	Truck driver
8330	Other mobile-plant operators	Bulldozer operator
8332	Earth-moving and related plant operators	Bulldozer operator
8333	Crane, hoist, and related plant operators	Crane operator
8334	Lifting-truck operators	Bulldozer operator
8400	Fabricating-machine operator	Factory machine operator
9131	Domestic helpers and cleaners	Housekeeper
9132	Cleaners in offices, hotels, and other establishments	Janitor
9140	Building caretakers and related cleaners	Janitor
9141	Building caretakers	Landscaper
9151	Luggage porters and deliverers	Bellhop
9161	Garbage collectors	Garbage collector
9211	Farmhands and laborers	Farm laborer

Continued on next page.

Appendix C continued.

ISCO-88	Description	Identity
9300	Laborers in mining, construction, manufacturing	Laborer
9311	Mining and quarrying laborers	Miner
9313	Building construction laborers	Construction laborer
9320	Manufacturing laborers	Laborer
9321	Assembling laborers	Assembly line worker
9322	Hand packers and other manufacturing laborers	Assembly line worker
9333	Freight handlers	Laborer

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